

#### PETROLEUM DEVELOPMENT OMAN

## Nimr Sludge Pit System Upgrade – FEED + DD

# Construction Scope of Work Main Project

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Ву



### Worley Parsons – Arabian Industries (JV)

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#### 1.0 INTRODUCTION

Petroleum Development Oman (PDO – Herein after called as Company) has proposed to construct and upgrade the existing Sludge disposal system at Nimr. The Nimr sludge pits are at about 3.5 km distance from NRPS sludge tank. Transfer of oil from sludge pit to sludge tank at NRPS is by trucks. The number of trucks has recently increased because of the increase in the amount of the oil in the sludge pits due to the increase in the number wells drilled, works over, and tanks cleaning activities. Hence two options studied for better handling of the sludge oil.

Option-1 is using existing system in which oil will be transferred by trucks/tanker however two new pumps to be installed at NRPS instead of existing pump P-48129.

Option-2 is installation of two new pumps at sludge pit and approx 3.5 km 6" line from sludge pits to sludge tank.

After comparison of the two options it is decided by PDO to go with option 2.

The scope is as stated below:

To carry out FEED, Detail Design & Procurement to construct and upgrade the sludge transfer system at NRPS.

Construction activity for this project to be carried out by others.

#### 2.0 EXTENT OF RESPONSIBILITY

The Scope of Work covers construction activities for *Civil, Mechanical, Electrical, Pipelines &* Instrumentation. Pre-commissioning and Commissioning assistance, in accordance with the enclosed drawings, specifications and requirements laid down in the contract. The Scope of Work as a minimum, shall include, but is not limited to the following:

The following sections describe the overall scope only and the actual extent of work shall be as given in the attached demolition and construction drawings. The Contractor shall review the documents and check and confirm with the Company if there are any discrepancies or ambiguities before proceeding with work.

Document Control Index for Process, Civil, Mechanical, Electrical and Control & Automation works are included in Appendix-1. For information and to assist the Contractor, drawings have been referenced throughout this Scope of Work as appropriate to the various areas of work described. While every effort has been made to ensure that these reference listings are complete, it must be realized that the full scope is defined by the attached drawings and not solely those that have been referenced herein the text.

#### 3.0 CIVIL

#### 3.1 General

The Contractor's scope of work involves in the following areas:

Nimr Sludge pit area



- Nimr Production station area
- Off-plot area

Various civil & structural activities involved in the above areas are as follows:

#### Nimr Sludge Pit area

- Modification / installation of existing fence and new gates
- Installation of new bench mark & wind sock
- Fabrication and installation of all structural steel components necessary for pipe supports,
   Valve operating platforms & cross overs
- Construction of foundations for pipe supports, sleepers, platforms & Cross overs
- Construction of RCC drain pits
- Construction of flange pits and collection pits
- Construction of spill pit and hard stand for pig launcher
- Update / preparation of necessary construction drawings based on final Vendor data
- Necessary Earth work excavation and backfilling for foundations, trenches
- Necessary checking at site for any discrepancies for the work involved before starting the work

#### Nimr Production Station area

- Fabrication and installation of all structural steel components necessary for pipe supports, Valve operating platforms & cross overs
- Construction of foundations for pipe supports, sleepers, platforms & Cross overs
- Construction of RCC drain pits
- Construction of flange pits and collection pits
- · Construction of spill pit and hard stand for pig launcher
- Update / preparation of necessary construction drawings based on final Vendor data
- Necessary Earth work excavation and backfilling for foundations, trenches
- Necessary checking at site for any discrepancies for the work involved before starting the work

#### Off-plot area

- Construction of new culverts including earth filling
- Necessary Earth work excavation and backfilling for foundations
- Necessary checking at site for any discrepancies for the work involved before starting the work

#### 3.2 Construction Drawings update

Construction drawings were prepared based without Vendor information. Based on final information, any update or new drawings needs to be prepared, it shall be done by the Contractor.

All engineering work shall be done as per PDO SP requirements.

#### 3.3 Structural Steel Works

All structural steel for pipe supports, platforms, ladders & cross over shall be fabricated in fabrication yard. Fabrication shall be done as shown in the construction drawings listed in Appendix.

Handrail shall be provided as per drawing for all platforms. For typical grating and hand railing details, refer to drawings listed in Appendix.

All pipe supports structural members shall be as per details shown on drawings given in Appendix.



Prior to fabrication, contractor shall check at site for any discrepancies and make necessary modifications to suite site conditions.

All Structural steel fabrication and erection shall be carried out as per SP-1279 Section G. Corrosion protection shall be as specified in SP-1246.

#### 3.4 Concrete Works for pipe supports, platforms, crossovers and sleepers

All foundations for platforms, pipe supports, crossovers and sleepers shall be constructed as per the drawings. For location of foundations and sleepers, refer foundation location plan drawings. If in-situ casting of concrete foundations proves economical, then they can be cast in-situ, however loading of pipes on supports shall be allowed only after the concrete is fully cured.

All foundation works shall be protected with protective coating as indicated in the drawings. The protective membrane shall be with Fosroc 'Nitocote PE 135' in 2 coats with glass mat or equivalent on bottom and sides of foundations.

The foundations are located within the existing facility. Hence before constructing the foundations, required space & under ground clearance for the foundation at site to be verified by the Construction Contractor.

Contractor to check and ascertain under ground cables. All earthing cables, if any, shall be suitably re-routed to install foundations.

All earthworks necessary for the installation of foundations and sleepers are deemed to be included in this scope of work.

All concrete works shall be carried out strictly in accordance with SP-1279 Section D.

All earth works shall be carried out as per SP-1279 Section C.

#### 3.5 Drain Pit

Concrete drain pit, flange pit & collection pit shall be constructed as per drawings listed in Appendix. Outside surface of pit shall be protected with 2 coats of Fosroc's 'Nitocote PE 135' with glass mat or equivalent. Suitable manhole cover, for accessing the pit, shall be provided.

Excavation, backfilling & compaction required for construction of pit shall also form a part of this scope.

All-concrete works-shall be carried out strictly in accordance with SP-1279 Section D.

All earth works shall be carried out as per SP-1279 Section C.

#### 3.6 Flange pit and collection pit

Flange pit wall shall be constructed with concrete hollow block work and base concrete slab with mesh reinforcement. The collection pit wall shall be constructed with solid concrete block work and base concrete slab. Outside surfaces of pits shall be protected with 2 coats of Fosroc's 'Nitocote PE 135' with glass mat or equivalent. For details, refer drawings listed in Appendix.

#### 3.7 Spill pit and hard strand for Launcher / Receiver

The spill pit and hard stand is provided to contain the spillage expected during the pigging operation. Outside surface of pit shall be protected with 2 coats of Fosroc's 'Nitocote PE 135' with glass mat or equivalent. The pit shall be constructed as per the details shown on the drawings listed in Appendix.



#### 3.8 Culverts

In the off-plot area, new concrete culverts are provided to facilitate new pipe crosses the existing road and to protect existing pipelines. Contractor shall verify the existing buried pipeline top elevation, prior to construction. Before starting the construction of culvert, required space & under ground clearance for the foundation at site shall be verified by the Construction Contractor. Due to culvert installation, existing roads shall be modified as shown in the construction drawings.

All concrete works shall be carried out strictly in accordance with SP-1279 Section D.

All earth works shall be carried out as per SP-1279 Section C.

#### 3.9 Excavation and Backfilling

Earthwork required for the construction of foundations, pits and grade slab shall be carried out and blinding concrete laid to level for the construction works. Care shall be taken not to damage any underground pipes and cables. After the completion of foundations including curing, the sides shall be back filled and compacted. All earth works shall be carried out as per SP-1279 section C.

Prior to the excavation for foundations, Contractor to check the under ground cables with cable detectors and the same shall be protected during the construction.

#### 4.0 MECHANICAL

#### 4.1 General

All the Mechanical work shall be carried out in accordance with the relevant drawings listed under Appendix-1 of this document & relevant Company standards such as Shell DEPs, PDO SPs / ERDs, standard drawings listed elsewhere in this document

The Mechanical / piping Scope of Work shall include, but not be limited to the following:

#### 4.2 Piping

The Piping Scope of Work shall include, but not be limited to the following: The Demolition and Construction scope of work shall be carried out in accordance with the Piping G.A drawings, Isometric drawings and Tie-in-schedule (Refer under this attached **Document control index**).

The contractor shall ensure that the following activities carried out during the work:

- a) Piping spool fabrication shall be started only after field verification of actual dimensions with the isometrics and piping General Arrangement drawings provided and checking site conditions.
- b) Piping material to be re-used shall be identified and shifted to the contractor store.
- c) The contractor shall complete testing, coating and painting of piping spools and keep ready with proper identification/ mark up for erection at the time of shut down.
- d) Ensure the positive isolation / Blinding of the process piping before and after demolition of piping.
- e) Locations of supports are to be as per piping General Arrangement drawings provided.

The mechanical work shall include, but not be limited to, the following:

• Demolition of existing piping, wherever specified.



- Pre-fabrication and Installation of piping.
- Non-destructive testing of piping.
- Coating and Painting.
- Flushing and hydrostatic testing.
- Bolting and torquing

For all the specifications, codes and standards indicated in this section, latest editions shall be followed. For all the drawings, latest revisions of NIMR Production station (NRPS), Piping demolition drawings, GA drawings and Isometric drawings shall be followed.

#### 4.3 Pre-Fabrication and Installation of Piping

The Contractor's scope of work includes the following activities of on-plot piping inside NIMR Production Station ( NRPS) that needs to be carried out during Shut down.

- Pre-Fabrication and supply in accordance with the drawings listed in Document Control Index attached with Appendix-1 and standards listed in Section 11.
- Testing of the spools.
- Installation of spools as indicated in the above drawings.
- Provision of temporary supports, if any applicable for Long Spools or Short spools shall be provided wherever necessary.

#### 4.4 Tie-in schedule

Tie-in of the existing lines and the new flanged spool pipes shall be done as per drawings PEFS, Construction piping Plans, Isometric drawings and tie-in schedule.

#### 4.5 Non Destructive Testing of Piping

Prefabrication, welding and NDT of spools shall be carried out in accordance with PDO SP-1173 and SP-1176. Non-destructive examination shall be carried out in accordance with SP-1176.

#### 4.6 Coating & Painting of Piping

External Painting and internal coating shall be carried out in accordance with SP-1246 (part 1 to part 5).

#### 4.7 Bolt Torquing and tensioning

Bolt torquing and tensioning shall be carried out in accordance with SP-2020. When the bolt tightening procedure is completed, to prevent corrosion a liberal coating of grease should be applied to the nuts up to the back of the flange, and to the stud ends protruding from the nuts. Bolt Tension Certificate (Appendix 8) to be prepared and included in final test pack.

#### 4.8 Flushing & Hydro Testing of Piping

The Design Pressure of the piping scope of work is 9550 Kpa (g) at 82°C. The Design Temperature is 5°C (Lower) and 60°C (Upper).

Hydro testing of the piping shall be carried out in accordance with SP-2051.

After Flushing, a preliminary leak testing (Nitrogen/Pneumatic) shall be carried out at a very low pressure (less than 200 kPa) for gross leak identification prior to a hydrostatic test in accordance with Section 5.2.5 of SP-2051, if required.

All piping shall be pressure tested in accordance with SP-2051, Section 5.0, to the pressure indicated on the isometric.

All equipment, consumables and fittings required for flushing and testing, including test medium shall be supplied by the Contractor. At the end of hydro testing, the Contractor shall make sure that the new pipe work is free of water and the water is disposed in an environmentally friendly way without spillage.

The Contractor shall supply temporary gaskets for testing the piping. High point vents and low point drains are already shown in the isometric drawings. However the Contractor shall review the same and if any additional vents and drains are required based on the Contractor's testing program, they shall be included in the Contractor's scope, including the supply of required material.

The quality of test water shall be in accordance with Appendix A of SP-2051. The Company's approval will be required for using any other test medium.

#### 4.9 Leak Testing

A Nitrogen leak test shall be carried out at a design pressure followed with Bubble test, in accordance with SP-2051.

#### 5.0 ELECTRICAL

#### 5.1 GENERAL

Electrical scope of work includes the following activities in accordance with the details indicated in the drawings. All materials required to complete the work as indicated in MTO shall be supplied by WPAI. However the materials which are not identified specifically but required for satisfactory completion of these activities are deemed to be included in the scope.

- Provide power supply to LV Distribution board G-6951 located in sludge pit area.
- Provide power supply to new sludge oil Transfer pump P-48357/48358, 48359/48360 and flow meters.
- Provide lighting and small power requirement for the new pump shed etc.
- Provide power supply to flood lights.
- LV Cable laying & terminations
- Earthing and bonding system of the entire new installations.

Contractor shall take necessary precautions while carrying out the construction, since the new equipment are to be installed in the existing 'live' facilities. Contactor should follow the permit to work (PTW) system.

Competent Electrical Person (CEP) & Senior Authorised Electrical Person (SAEP) should be made available by the contractor.

#### 5.2 EQUIPMENT INSTALLATION:

- Installation, testing & Pre-commissioning of the following ,company procured equipment to feed power supply to LV distribution board ,sludge transfer pump and dosing pump (The contractor shall provide installation materials required for the new equipment).
  - o Installation of 415V Junction box 48-JB-001, Refer drg. NIM-4-6411-001.
  - o 415V LV Distribution Board. Refer drg. NIM-4-6411-001.
  - Sludge oil Transfer pump motors P-48357/48358, Oxygen scavenger dosing pump P-48359/48360, Refer drg. NIM-4-6411-001& NIM-4-6416-003.
  - o Installation of flood light poles. Refer drg. NIM-4-6416-003 & NIM-4-6412-001 DQ.



#### 5.3 CABLE LAYING & TERMINATIONS

Laying & Termination of LV power & control cables through underground cable trenches between existing feeder pillar substation MDB-1 & New LV distribution board as detailed in cable trench layout & section drawings NIM-4-6416-001, NIM-4-6416-002 & NIM-4-6416-003. Refer civil construction scope of work for excavation & back filling of cable trenches. The materials required for cable installation in the underground trench shall be supplied and installed in accordance with the Company standard drawings. Existing cable route shall be identified and pipe sleeves at road crossings for the new cables shall be provided.

Cable rising from underground trench to the panels shall be installed by providing required cable support. These cables shall be protected by PVC pipes. The terminations shall be carried out with cable termination kits, reference shall be made to the equipment terminal details in the equipment vendor drawings for the requirement of lugs.

Contractor shall check the drum length of the cables and supply if any cable joint required for the new cables. Cable loop shall be provided at the cable straight through joint (5m loop). Loop shall be provided within the trench. Concrete cable markers shall be supplied & installed by contractor along with the cable trenches in accordance with PDO standard drawing STD-4-0106-001.

The complete approval procedure for cable jointers and terminators used on this project including all testing and certification shall be in accordance with the Company standards and procedures as per specification SP-1099.

Contractor shall follow cable route & section drawings for identification of no. of cables running through each section of the cable trenches. Laying and termination of cables include the following:

- LV cables from LV switchboard MDB-1, located in the existing feeder pillar Substation-5 to new LV distribution board G-6951. Refer NIM-4-6411-001.
- LV cables from LV distribution board G-6951 to Sludge oil Transfer pump motors P-48357/48358, Oxygen scavenger dosing pump P-48359/48360, Refer drg. NIM-4-6411-001& NIM-4-6416-003.
- LV cables from LV distribution board G-6951 to pump shed lighting, pump shed socket outlet for auxiliary.
- Laying of 4Cx10sq.mm. XLPE/SWA/PVC cable for flood lighting through underground cable trench between LV distribution board G-6951 to lighting junction boxes and further cabling to fixtures Refer drg.NIM-4-6416-003 & NIM-4-6412-001 DQ
- The cables shall be laid directly buried in the underground trench as indicated in cable routing/cable trench/cable tray layout drawings.
- Refer cable schedule drawing no. NIM-4-6413-001-DQ for LV Power cable terminations and for control cable terminations refer control wiring diagrams NIM-4-6420-001-DQ & NIM-4-6421-001-DQ. Contractor shall provide additional wiring within the panels as indicated in the interconnection drawings to carryout minor wiring modification required for the project.

#### 5.4 EARTHING

Earthing and bonding system of the entire new installations including supply and installation of new earth pit, earth busbar, interconnection of new equipment with earth grid, new earthing ring, interconnection of new earthing ring with existing earth grid, etc. as per company std drawings and as detailed in earthing layout drawings NIM-4-6418-001-DQ. The contractor shall refer the equipment vendor drawings while terminating the earthing conductors. The scope also includes earthing of supporting steel structures at various locations as per PDO Specification SP-1109. The contractor shall supply all the necessary hardware required for the earthing installation.



Where the screens of the cables are used for earthing, these shall be sleeved with green/yellow PVC sleeves, the supply of the same and other earthing accessories which are not listed in the MTO is included in the contractor's scope.

#### 5.5 LV SWITCHBOARD COMPONENTS

Existing spare feeders available in the LV switchboard MDB-1 shall be used to provide power supply for the new LV distribution board. The contractor shall install Loose electrical components (supplied as project materials) in the existing spare feeder of LV switchboards with required name plate tags as indicated in the single line diagrams and subsequently testing of the complete draw out shall be carried out.

#### 5.6 WINPCS

WinPCS package is prepared for this project. Contractor shall include for completion of data required for WinPCS, under their scope of work.

Contractor to comply with PDO Procedure PR-1169 Initial Start Up Procedure, where relevant to the scope of work, the key elements as highlighted below, but not limited to the following:-

Windows based Project Completion and Certification System, i.e. WinPCS, is mandatory for all PDO construction/commissioning contracts. As such, it is to be used also for this project. WinPCS is used to control and monitor the mechanical completion, pre-commissioning, commissioning and hand-over of this project against the components introduced (or modified) in the design phase by the Design Consultant. It improves and maintains the quality, consistency and completeness of construction, pre-commissioning and commissioning. It also facilitates consistent progress monitoring and reporting from construction to commissioning, and provides a tool for the communication and management of engineering queries and punch-list items. Implementation of this WinPCS shall be in line with PR-1561 WinPCS Procedure.

Each component/item is assigned the required, WinPCS generated, mechanical completion and commission check sheets is issued to construction contractor as separate document.

Commissioning plan which follows the Index in Appendix 1 of PR-1169, with the necessary input from production support team and site commissioning engineer, is issued separately. Prior to start of construction, the Project Engineer shall coordinate the refinement of the commissioning plan to include step-by-step commissioning procedures. Each component/item identified shall be installed and commissioned as per the relevant PDO/project standards and specifications and verified against the applicable WinPCS check sheets.

Throughout the construction, pre-commissioning and commissioning phases, WinPCS check-sheets shall be completed at site by the construction contractor and/or commissioning engineer, as applicable, and their status shall be entered regularly (at most weekly) into the system by the Contractor's WinPCS coordinator to enable actual progress to be monitored.

A structured and sequential handover from each phase to the next, using WinPCS generated checksheets and handover certificates, in line with Section 2.4 of PR-1169, shall be carried out as follows:-

Prior to Pre-commissioning activities the Construction Co-ordinator with the discipline engineers should ensure that the construction check sheets and construction handover certificates have all been completed and their status updated in the WinPCS database by the Contractor.

Prior to Commissioning activities commencing, the Commissioning Engineer with the discipline engineers should ensure that the pre-commissioning check sheets and handover certificates have all been completed and their status updated in the WinPCS database by the Contractor.

Prior to system handover to operations, the Commissioning Engineer shall coordinate with both the Construction Coordinator and Project Engineer to ensure that the system acceptance certificate and associated system exception list are compiled and signed by Delivery Team Leader.

Construction, commissioning and final handover certificates will be generated through WinPCS and will be available from the WinPCS coordinator/construction supervisor/commissioning engineer on completion/acceptance of all 'A' punch list items and the required WinPCS check sheets. Punch or exception list items fall into two categories, as follows:-



A category: Items that must be completed before handover can proceed

B category: Items that will not affect the safe progression of commissioning activities but shall be completed before Full Acceptance

#### 5.7 PRE-COMMISSIONING & TESTING

The contractor's scope includes testing, pre-commissioning and assistance during commissioning for the modified plant sections. The contractor shall test and pre-commission the complete installation in accordance with the requirements of Company Specifications.

The contractor shall be responsible for maintaining complete documentation of all tests carried out and these shall be submitted to the Company upon completion of pre-commissioning activities. The Company Site Representative shall approve the format for the test packages.

The contractor shall ensure that all the work carried out by him is free from defects. The contractor shall rectify any defects found during testing and commissioning immediately.

#### 5.8 TIE-IN AND SHUTDOWN REQUIREMENTS

The construction contractor shall follow/maintain his schedule in accordance with the planned shutdown of the facilities. The contractor shall liaise with Company construction supervisor for shutdown requirement.

The contractor shall submit a detailed construction/demolition procedure to Company Site Representative for approval from Company 'Operations' Group.

#### 5.9 MATERIALS

#### 5.10 PROJECT MATERIALS

WPAI procured materials as per the drawing control index NIM-1-2635-400-DQ, Appendix-1.

Other materials which are not listed above but are required for the completion of the Work in accordance with the specifications and drawings (inclusive of consumable) are to be procured separately by site intend as per the contract norms.

All materials shall be in accordance with the Company standards and specifications. Where material in accordance with Company standards and specifications is not available, the contractor shall propose equivalent alternatives for Company approval.

#### 5.11 REMOVED MATERIALS

All the removed materials shall remain the property of the Company and the contractor shall not use these materials under any circumstances. The contractor shall remove, load and transport the redundant materials, from the work site to Company designated stores in accordance with the instructions of the Company Site Representative.

#### 5.12 DRAWINGS AND DOCUMENTATION

#### 5.13 CONSTRUCTION DRAWINGS

The Work shall be carried out in accordance with referred standard drawings and the construction drawings listed under Document Control Index as Appendix-1. This includes vendor packages listed separately as Appendix-2.

Any detail of work not indicated in the drawings but obviously necessary for a good and proper workman-like construction shall be deemed to be part of the Work and as such shall be included in the contractor's Scope of work. The contractor shall notify the Contractor of such discrepancies or any other ambiguity, prior to the start of fabrication/construction to allow the Contractor to detail and specify requirements.



#### 5 14 AS-BUILT DRAWINGS

The contractor Scope of Work includes provision to the Contractor of two sets of marked up "As-Built" prints. These prints shall be submitted for Company approval one week after the completion date. Any subsequent modifications shall be marked separately.

#### 5.15 CODES AND STANDARDS

The contractor shall execute the work in accordance with Company codes and standards. The order of precedence shall be as follows:

- Decrees and Laws of the Sultanate of Oman
- Specifications (SPs)
- SIPM Design and Engineering Practices (DEPs).
- International Standards.
- Vendor Procedures.

Where conflicts arise within codes and standards, the contractor shall seek a ruling from the Company through the Company Site Representative.

No deviation from codes and standards will be permitted without prior written approval from the Company.

The Codes and Standards listed below are deemed to be the most relevant

#### 6.0 CONTROL & AUTOMATION

The Instrumentation scope of work includes installation, calibration, testing, loop checking and pre-commissioning of complete instrumentation system as required for the completion of On-Plot Header Replacement Project.

The Scope of Work covers construction activities for Control & Automation works in accordance with the approved drawings, specifications and requirements laid down in the EM contract C31/0606. The Scope of Work as a minimum, shall include, but is not limited to the following:

- Calibration, Fabrication & Instrument installation.
- Field Multicore and Branch Cable Laying
- Continuity & Loop Check
- Supply of all equipment, tools and tackles for fabrication and construction
- All C&A works in the Control Room as per requirements of this project based on the Approved for Construction Drawings/documents.
- Preparation of as-built (red line) mark-ups.
- Loop Check Support
- Pre-commissioning
- Commissioning Assistance

The following sections describe the overall scope only and the actual extent of work shall be as per the construction drawings listed in document control index attached as Appendix-1.

Document Control Index (DCI) or Master Document Index (MDI) for C&A works is included in this document for reference as Appendix 1 and the MTO for reference is attached as Appendix-II. DCI is a

dynamic list and is subject to change. All construction drawing are issued to site for construction. Revision numbers, wherever shown, against Drawings and documents in this document need not be the latest. Refer Latest Revisions of drawings and documents and DCI.

While executing, in case of any doubt, technical queries shall be raised to coast engineering department.

#### 7.0 PRE-COMMISSIONING & TESTING

The Contractor's scope includes testing, pre-commissioning and assistance during commissioning for the modified plant sections. The Contractor shall test and pre-commission the complete installation in accordance with the requirements of Company Specifications SP-2051 and DEP 62.10.08.11, Nov 03 (Inspection & Functional testing of Instrument)

The Contractor shall be responsible for maintaining complete documentation of all tests carried out and these shall be submitted to the Company upon completion of precommissioning activities. The Company Site Representative shall approve the format for the test packages.

The Contractor shall ensure that all the work carried out by him is free from defects. Contractor shall rectify any defects found during testing and commissioning immediately.

#### 8.0 DRAWINGS AND DOCUMENTATION

#### 8.1 Construction Drawings

The Work shall be carried out in accordance with referred standard drawings and the construction drawings listed under Document Control Index as Appendix-1.

Any detail of work not indicated in the drawings but obviously necessary for a good and proper workman-like construction shall be deemed to be part of the Work and as such shall be included in the Contractor's Scope of work. The Contractor shall notify the Company of such discrepancies or any other ambiguity, prior to the start of fabrication/construction to allow the Company to detail and specify requirements.

#### 8.2 As-Built Drawings

The Contractor Scope of Work includes provision to the Company of two sets of marked up "As-Built" prints. These prints shall be submitted for Company approval one week after the completion date before commissioning. Any subsequent modifications shall be marked separately. All the As-built drawings shall be Auto CAD & submitted as per company procedure. WinPcs update shall be done on daily basis during precommissioning and commissioning.

#### 9.0 CODES AND STANDARDS

The Contractor shall execute the work in accordance with Company codes and standards. The order of precedence shall be as follows:

- Decrees and Laws of the Sultanate of Oman.
- PDO Engineering Reference Documents (ERDs), Specifications (SPs)
- SIPM Design and Engineering Practices (DEPs).
- International Standards.
- Vendor Procedures.

Where conflicts arise within codes and standards, the Contractor shall seek a ruling from the Company through the Company Site Representative.

No deviation from codes and standards will be permitted without prior written approval from the Company.

The Codes and Standards listed below are deemed to be the most relevant for respective disciplines.

#### 9.1 Control & Automation

DEP62.37.10.12 GEN Instrument Installation Procedure.

DEP32.37.00.33 PDO Mounting Of Plant Instruments.

#### 9.2 Mechanical Engineering:

PDO-ERD-26-02 Construction specification for Oil, Gas and utility Facilities

ERD-43-15 (Nov '98 Specification of Polyethylene Liners in Carbon Steel Flow lines and

Pipelines.

	i ipolitics.				
SP-1166	Specification For Identification Of On-Plot Pipe Work.				
SP-1171	Specification for Quality Assurance of Design, Construction and Engineering Works.				
SP-1173	Specification for welding of on-plot CRA pipe work (Amendments/Supplements to ASME B31.3)				
SP-1176	Non Destructive Examination (Amendments / Supplements to ASME BPV Section V).				
SP-1187	Application and Selection of Standard Pipe Supports				
SP-1239	Specification for Lifting Equipment and Lifting Operations.				
SP – 1246 (Part 1 to 5) Specification for Painting and coating for Oil & Gas Production facilities					
SP-2020	Specification for Flange connections: Bolt Torquing and Tensioning.				
SP-2051	Specification for flushing, pressure testing, pickling, sensitive leak testing of mechanical equipment & Piping.				
PR-1272	Standard welding procedure qualification records for on-plot pipe work.				
DEP 31.38.01.31	Shop and Field Fabrication of Piping.				

#### 9.3 Civil Engineering

DEP 31.38.01.15

PDO STANDARDS					
GU-628 Guide to civil & Buildings standard drawings					
GU-629	Guidelines for Application and Selection of Standard Pipe Supports				
GU-631	Guide line for Sunshade – Spec, Design requirement & Std. dwgs.				

Piping Classes – Exploration and Production



SP-1187	Specification for Application and Selection of Standard Pipe Supports
<u>SP-1275</u>	Specification & criteria for Design of Civil & Building works
SP-1281 Engineering Specification for Road works	
<u>SP-1284</u>	Specification for Sign & Sign boards – Standard sign catalogue
SP-1297	Specification for Civil & Building Construction- Excavation & Earthworks
SHELL GROUP	STANDARDS
DEP	Structural Design & Engineering
34.00.01.30	
DEP	Road paving, surfacing, slope protection & Fencing
34.13.20.31	
DEP	Reinforced Concrete Structures
34.19.20.31	
DEP	Steel Structures
34.28.00.31	
INTERNATIONA	L CODES & STANDARDS
BS 5950	Structural Use of Steel Work in Building
BS 8110	Structural Use of Concrete

#### **ELECTRICAL ENGINEERING Standards and Specifications:**

PDO-SP-1099	Electrical Installation Practice
PDO-SP-1103	Electrical Engineering Guidelines Amends/Supplement to DEP 33.64.10.10
PDO-SP-1104	Electrical Safety Rules
PDO-SP-1105	Electrical Standard Drawings list
PDO-SP-1107	Electrical Protection systems
PDO-SP-1108	Electrical Safety Operation Procedures
PDO-SP-1109	Specification for Earthing and bonding.
PDO-SP-1100	Specification for Testing & Commissioning of Electrical Equipment
PDO-SP-1171	Specification for Quality assurance of Design, Construction and
	Engineering works
DEP 33.64.10.10	Electrical Engineering-Guidelines

DEP 63.10.08.11 Field Commissioning & Maintenance of Electrical Installations & Equipment.



#### **APPENDIX - 1**

## DOCUMENT CONTROL INDEX Control & Automation

#### Item# Document No Description Rev# NIM-5-4736-DQ Cable Block Diagram 1 Α 2 MTO for Installation Items Α NIM-5-4737-DQ Instrument Impulse lines & Electropneumatic Hook-3 NIM-5-4738-DQ Up. Α 4 NIM-5-4739-DQ Instrument Name Plate Α 5 NIM-5-4740-001-DQ Instrument Location Layout Α 6 NIM-5-4741-001-DQ Trenches of Instrument Cables Α 7 NIM-5-4742-DQ **ICTD Junction Box** NIM-5-4743-DQ 8 Instrument Eng. Data Sheets Α 9 NIM-5-4744-DQ Trip & Alarm Settings Α 10 NIM-5-4745-001-DQ Instrument loop Diagram 0 Trenches of Instrument Cables 11 NIM-5-5001-001-DQ Α В 12 NIM-5-5005-001 Cause & Effect Diagrams 13 NIM-5-5005-002 Cause & Effect Diagrams Α 14 NIM-5-5005-007 Cause & Effect Diagrams Α 15 NIM-5-5014-001-DQ Instrument Location Layout Α Instrument Location Layout 16 NIM-5-5015-001-DQ Α 17 NIM-5-5016-001-DQ Instrument Location Layout Α 18 NIM-5-5016-002-DQ Instrument Location Layout Α 19 NIM-5-5043-DQ ICTD Junction Box Α 20 NIM-5-5044-DQ Inst. Cable Schedule Α NIM-5-5047-001-DQ Control Room Equipment Layout 21 Α 22 NIM-5-5065-DQ Trip & Alarm Settings Α 23 NIM-5-5271-DQ Instrument Eng. Data Sheets Α SGS Functional Logic Diagram 0 24 NIM-5-5588-DQ 25 ICTD Signal Distrubution Cabinet Α NIM-5-5589-DQ 26 NIM-5-5591-DQ ICTD System Cable Α 27 DCS loop Diagram Α NIM-5-5594-DQ 28 NIM-5-5596-DQ SGS loop Diagram Α 29 NIM-5-6079-DQ DCS Functional Logic Diagram 0



30	NIM-5-6531-DQ	Functional Logic Diagram-Sludge Pit	0
31	PAIP00405/IO/5001	Instrument I/O List	Α

#### **ELECTRICAL**

Item#	Document No	Description	Rev#
1	NIM-4-2801-DQ	415V SLD main distribution board, MDB-1	В
2	NIM-4-2815-002-DQ	SLD OF MDB-1	Α
3	NIM-4-2817-001-DQ	Cable layout and DB location	Α
4	NIM-4-6411-001-DQ	415V SLD PDB	В
5	NIM-4-6412-001-DQ	Schematic lighting diagram	В
6	NIM-4-6413-001-DQ	LV Cable schedule cover sheet	В
7	NIM-4-6413-002-DQ	LV Cable schedule Index sheet	В
8	NIM-4-6413-003-DQ	LV Cable schedule	В
9	NIM-4-6415-001-DQ	Overall cable route layout	Α
10	NIM-4-6415-002-DQ	Cable route layout at sludge pit area	Α
11	NIM-4-6416-001-DQ	Overall cable trench layout	Α
12	NIM-4-6416-002-DQ	Cable trench layout SWTP	Α
13	NIM-4-6416-003-DQ	Cable trench layout at sludge pit area	Α
14	NIM-4-6417-001-DQ	Cable trench layout sections	Α
15	NIM-4-6418-001-DQ	Earthing layout at sludge pit area	Α
16	NIM-4-6420-001-DQ	Electrical control diagram LV motor above 5.5Kw.	Α
17	NIM-4-6421-001-DQ	Electrical control diagram LV motor below 5.5Kw.	Α
31	PAIP00405/MTO/401	Electrical bulk MTO	В



APPENDIX – 2

MATERIALS LIST



# PAIP00405- Nimr Sludge Pit Up gradation MTO- Electrical

# WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System Upgrade Disc:Electrical MTO Rev # :A

The preliminary material take off (MTO), Bill of Quantities (BOQ) and quantity in BOQ or MTO provided with tender package shall not be considered for cost estimation. The MTO and BOQ provided with tender do not necessarily contain all the items or material required to complete the scope. The preliminary material take off (MTO), Bill of Quantities (BOQ) and quantity in BOQ or MTO provided with tender package are prepared prior to freezing the design and are preliminary.

approval shall be taken from Design Engineer prior to bidding, order placement and manufacturing.

Serial Number	Туре	SAP#	MESC#	WPAI Spec #	AVME#	Description	иом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
	Power DB				<del></del>	415V, 125A, 3Ph+N, 50Hz, 10kA for 1 Sec. Outdoor Distribution Board	Each	1	Rev. A		PAIP00405/RQ/401
1	Cable: LV	1000047762	68.44.14.459.1		4.15.1	LV Cable: 4Cx240 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	1800	Rev. A		500mts/Drum size
2	Cable: LV	1000395309			4.15.1	LV Cable: 4Cx50 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	50	Rev. A		
3	Cable: LV	1000047742	68.44.14.331.1		4.15.1	LV Cable: 3Cx16 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	350	Rev. A		
4	Cable: LV	1000047741	68.44.14.309.1		4.15.1	LV Cable: 3Cx10 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	1400	Rev. A		pplied in two lengths nts) olny.
5	Cable: LV	1000047740	68.44.14.307.1		4.15.1	LV Cable: 3Cx6 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	150	Rev. A		
6	Cable: LV	1000395303			4.15.1	LV Cable: 2Cx10 sq.mm, 600/1000V, Flexible PVC Copper cable	Metre	50	Rev. A		
7	Cable: LV	1000047735	68.44.14.201.9		4.15.1	LV Cable: 2Cx6 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	300	Rev. A		
8	Cable: LV	1000047763	68.44.14.703.1		4.15.1	LV Cable: 7Cx2.5 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	600	Rev. A		
9	Cable: LV	1000047751	68.44.14.403.1		4.15.1	LV Cable: 4Cx2.5 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	300	Rev. A		
10	Cable: LV	1000047738	68.44.14.303.1		4.15.1	LV Cable: 3Cx2.5 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	100	Rev. A		
					1.11						
11	Cable Joint	1000754004			4.16.1	Cable Jointing Kit suitable for 4Cx240 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Each	8	Rev. A		
12	Cable Gland	1000048326	68.80.58.744.1		4.16.5	Cable Gland suitable for 4CX240 sq.mm Cable (M75)	Each	3	Rev. A		
13	Cable Gland	1000048322	68.80.58.736.1		4.16.5	Cable Gland suitable for 4Cx50 sq.mm Cable (M32)	Each	3	Rev. A		
14	Cable Gland	1000048321	68.80.58.734.1		4.16.5	Cable Gland suitable for 3Cx16 sq.mm Cable (M25)	Each	6	Rev. A		
15	Cable Gland	1000048321	68.80.58.734.1		4.16.5	Cable Gland suitable for 3Cx10 sq.mm Cable (M25)	Each	20	Rev. A		
16	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 3Cx6 sq.mm Cable (M20)	Each	10	Rev. A		
17	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 2Cx10 sq.mm Cable (M20)	Each	4	Rev. A		
18	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 2Cx6 sq.mm Cable (M20)	Each	6	Rev. A		
19	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 7Cx2.5 sq.mm Cable (M20)	Each	10	Rev. A		
20	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 4Cx2.5 sq.mm Cable (M20)	Each	20	Rev. A		
21	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 3Cx2.5 sq.mm Cable (M20)	Each	40	Rev. A		
22	Lock Nut	1000048282	68.80.58.090.9		A 16 F	Look Nut quitable for M75 Cland	<u> </u>		- ·		
		<del> </del>			4.16.5	Lock Nut suitable for M75 Gland	Each	3	Rev. A		
23	Lock Nut	1000048278	68.80.58.076.9		4.16.5	Lock Nut suitable for M32 Gland	Each	3	Rev. A		
24	Lock Nut	1000048277	68.80.58.072.9		4.16.5	Lock Nut suitable for M25 Gland	Each	26	Rev. A		
25	Lock Nut	1000048276	68.80.58.068.9	·	4.16.5	Lock Nut suitable for M20 Gland	Each	90	Rev. A		

### WorleyParsons Arabian Industries JV **Material Take Off**

Project Title: Nimr Sludge Pit System Upgrade Disc:Electrical

MTO Rev # :A

		T	Υ	<del></del> _		<u>material rate on</u>				r	MTO Rev #
Serial Number	Туре	SAP#	MESC#	WPAI Spec #	AVME#	Description	иом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
26	PVC Shroud	1000048262	68.80.56.924.9		4.16.5	PVC Shroud type-F suitable for M75 Gland	Each	3	Rev. A		
27	PVC Shroud	1000048258	68.80.56.916.9		4.16.5	PVC Shroud type-C suitable for M32 Gland	Each	3	Rev. A		
28	PVC Shroud	1000048257	68.80.56.914.9		4.16.5	PVC Shroud type-B suitable for M25 Gland	Each	26	Rev. A		
29	PVC Shroud	1000048256	68.80.56.912.9		4.16.5	PVC Shroud type-A suitable for M20 Gland	Each	90	Rev. A		
				·	21 10 20 10 10 10 10 10 10 10 10 10 10 10 10 10				_		
30	Earth Tag	1000255978			4.16.5	Earth Tag suitable for M75 Gland	Each	3	Rev. A		
31	Earth Tag	1000223714			4.16.5	Earth Tag suitable for M32 Gland	Each	3	Rev. A		
32	Earth Tag	1000223710			4.16.5	Earth Tag suitable for M25 Gland	Each	26	Rev. A		
33	Earth Tag	1000223708			4.16.5	Earth Tag suitable for M20 Gland	Each	90	Rev. A		
34	Cable Lug	1000048099			4.16.1	Cable Lug suitable for 240 sq,mm Cable	Each	10	Rev. A		
35	Cable Lug	1000048085			4.16.1	Cable Lug suitable for 50 sq,mm Cable	Each	10	Rev. A		
36	Cable Lug	1000048084			4.16.1	Cable Lug suitable for 16 sq,mm Cable	Each	20	Rev. A		
37	Cable Lug	1000048083			4.16.1	Cable Lug suitable for 10 sq,mm Cable	Each	100	Rev. A		
38	Cable Lug	1000048081			4.16.1	Cable Lug suitable for 6 sq,mm Cable	Each	40	Rev. A		
39	Cable Lug	1000048080			4.16.1	Cable Lug suitable for 2.5 sq,mm Cable	Each	150	Rev. A		
40	Cable Acces.	1000048555	68.85.12.419.1		4.16.1	Electrical Insulation Tape Yellow, 6 Metre/Roll	Roll	20	Rev. A		
41	Cable Acces.				4.16.1	Pin type terminal blocks & Ferrules	Pkt	A/R	Rev. A		
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,										
42	Trench	1000047983	68.76.81.106.9		4.16.3	Underground Cable Tiles size 1000mm x 240mm x 6mm thick	Each	2700	Rev. A		
43	Trench	1000048548	68.85.12.356.9		4.16.3	Underground Warning Tape 150mm width, 365mts/Roll	Metre	2700	Rev. A		
44	Trench	1000048104	68.79.02.006.9		4.16.3	Plain Lead Strip Underground Cable Nos. 19mm x 1.6mm x 300mm Long, 11 Metre/Roll	Roll	10	Rev. A		
45	Trench	1000075844			4.16.3	LV Cable Route Marker	Each	25	Rev. A		
46	Trench	1000048205			4.16.3	100mm Dia uPVC Pipe	Metre	60	Rev. A		
47	Trench				4.16.3	150mm Dia uPVC Pipe	Metre	20	–Rev. A		
					:	CABLE MARKER FOR ABOVE GROUND CABLE AS PER (STD-4-0108-001-4-E)					
48	Cable Acces.	1000521146			4.16.3	Cable Tie, Black, Nylon, 368 x 3.6mm	Pocket	2	Rev. A		
49	Cable Acces.	1000535192			4.16.3	4mm wide Nylon strapping Hellermann TY4-S1	Pocket	2	Rev. A		
50	Cable Acces.				4.16.3	Arrowtag Hellermann type AT3	Pocket	A/R	Rev. A		
51	Cable Acces.				4.16.3	Ovalgrip Marker Hellermann type H085	Pocket	A/R	Rev. A		
52	Cable Tray	1000069935			4.20.5	75mm wide heavy duty return flange G.I. Cable Tray	Metre	25	Rev. A		
53	Cable Tray	1000069990			4.20.5	Ventilated cover for 75mm wide Cable Tray	Metre	25	Rev. A		
54	Cable Tray	1000223944			4.20.5	Cable Tie 240mm Length	Pocket	2	Rev. A		
55	Cable Tray				4.20.5	Nut, Bolt & Clamps for fixing Trays	Each	A/R	Rev. A		
56	Other				4.20.5	G.I. Trunking 75mm x 75mm	Metre	50	Rev. A		

## WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System Upgrade
Disc:Electrical
| MTO Rev # :A

		1	T	Y		<u>material rand on</u>	- <del>-</del>	,			MTO Rev
Serial Number	Туре	SAP#	MESC#	WPAI Spec #	AVME#	Description	иом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
57	Other				4.20.5	20x20 Unistrut G.I. Slot Type / 12 Metre Length	Each	A/R	Rev. A		
58	Other				4.20.5	M6x30 Bolt (Bolt Head Half Round)	Each	A/R	Rev. A		
59	Other				4.20.5	M6 Spring Nut	Each	A/R	Rev. A		
60	Other				4.20.5	M25 PVC Gland	Each	A/R	Rev. A		-
							-				
61	Earthing	1000047626	68.14.07.382.1		4.17.1	1Cx25 sq.mm Y/G Earth Cable	Metre	200	Rev. A		
62	Earthing	1000047627	68.14.07.392.1		4.17.1	1Cx70 sq.mm Y/G Earth Cable	Metre	2800	Rev. A		· · · · · ·
63	Earthing	1000048060	68.78.90.426.1		4.17.1	Branch Connector suitable for 70/70 sq.mm	Each	10	Rev. A		
64	Earthing	1000048059	68.78.90.422.1		4.17.1	Branch Connector suitable for 70/25 sq.mm	Each	20	Rev. A		
65	Earthing	1000780669			4.17.1	Earthing Terminal Lugs 1Cx70 sq.mm Cable (Y/G)	Each	10	Rev. A		
66	Earthing	1000780666			4.17.1	Earthing Terminal Lugs 1Cx25 sq.mm Cable (Y/G)	Each	20	Rev. A		
67	Earthing	1000047994	68.77.02.126.9		4.17.1	Earth Boss	Each	20	Rev. A		
68	Earthing	1000048555	68.85.12.419.1		4.16.1	Electrical Insulation Tape Yellow, 6 Metre/Roll	Roll	2	Rev. A		
						STEEL EARTH PIT AS PER DRG, (STD-4-0310-001-4-F)					
69	Earthing	1000048666	68.89.20.148.9		4.17.1	Earth Inspection Pit, Steel housing & Cover	Each	8	Rev. A		
70	Earthing	1000707169			4.17.1	Extensible earth rod,Dia 15mm x LG 1220mm	Each	104	Rev. A		
71	Earthing	1000707154			4.17.1	Coupling screw,p-bz outer thread for 15mm	Each	96	Rev. A		
72	Earthing	1000707153			4.17.1	Steel driving cap,hardened ,allow	Each	8	Rev. A		
73	Earthing	1000707170			4.17.1	Tips, Hardened steel for 15mm driving tip	Each	8	Rev. A		
74	Earthing	1000047990	68.77.02.078.1		4.17.1	70 sq.mm two way through clamp	Each	8	Rev. A		
75	Earthing	1000048060	68.78.90.426.1		4.17.1	Branch connector 70/70 sq.mm	Each	8	Rev. A		
76	Earthing	1000047627	68.14.07.392.1		4.17.1	1C x 70 sq.mm Y/G Cable	Metre	120	Rev. A		
77	Earthing				4.17.1	Marconite	Pocket	80	Rev. A		
						EARTHING BUSBAR AS PER DRG, (STD-4-0303-001-4-D)					· · · · · ·
78	Earthing	1000045040	67.28.36.188.1		4.17.1	950mm x 50mm x 10mm thick copper bar	Each	3	Rev. A		
79	Earthing	1000062976	81.26.25.112.1		4.17.1	M10 X 100mm Long rawlbolt or equal	Each	6	Rev. A		
80	Earthing	1000062970	81.04.62.188.1		4.17.1	M10 x 40mm Long brass nut and bolt	Each	60	Rev. A		
81	Earthing		81.78.06.160.1		4.17.1	M10 Brass washer	Each	60	Rev. A		
82	Earthing	1000524103	74.13.08.026.1		4.17.1	25mm Dia galvanised line pipe	Metre	1.5	Rev. A		
83	Earthing	1000780666			4.17.1	Cable Lugs 1Cx25 sq.mm Cable (Y/G)	Each	60	Rev. A		
84	Earthing	1000780669			4.17.1	Cable Lugs 1Cx70 sq.mm Cable (Y/G)	Each	6	Rev. A		
						EARTHING DETAILS GATE & FENCE AS PER DRG, (STD-4-0306-001-4-D)					
85	Earthing	1000069880	68.01.23.052.9		4.17.1	Flexible Braid Jumper Burndy Type BG-12	Each	16	Rev. A		
86	Earthing	1000047993	68.77.02.106.9		4.17.1	Burndy Type GK 1826 earth clamp	Each	8	Rev. A		· · · · · · · · · · · · · · · · · · ·
87	Earthing	1000973324	74.86.05.215.1		4.17.1	25mm Heavy gauge PVC Pipe	Metre	4	Rev. A		
88	Earthing	1000049087	70.32.65.025.1		4.17.1	25mm Saddle	Each	8	Rev. A		
89	Earthing	1000048059	68.78.90.422.1		4.17.1	70/25 sq.mm branch connector	Each	8	Rev. A		

# WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System Upgrade Disc:Electrical

WD3 N	umber. Milvi.in.u					<u>Material Take Off</u>					Disc:Electric
Serial Number	Туре	SAP # MESC # WPAI Spec # AVME # Description		Description	MOU	Total Quantity	Rev#	Additional Qty. to be Procured	MTO Rev #		
90	Earthing	1000047626	68.14.07.382.1		4.17.1	1Cx25sq.mm Y/G Earth cable	Metre	24	Rev. A		
91	Earthing	1000047994	68.77.02.126.9		4.17.1	Earth Boss	Each	16	Rev. A		
92	Earthing	1000063796	81.41.17.018.1		4.17.1	M10 Carbon Steel Nut	Each	16	Rev. A		
						EARTHING DETAILS FENCE POST AS PER DRG, (STD-4-0308-001-4-D)		50			
93	Earthing	1000973325	68.77.02.106.1		4.17.1	Burndy Type GK 1826 earth clamp	Each	50	Rev. A		
94	Earthing	1000973324	74.86.05.215.1		4.17.1	25mm Heavy Gauge PVC Pipe	Each	25	Rev. A		
95	Earthing	1000048059	68.78.90.422.1		4.17.1	70/25 sq.mm branch connector	Metre	50	Rev. A		
96	Earthing	1000049087	70.32.65.025.1		4.17.1	25mm Saddle	Each	50	Rev. A		
97	Earthing	1000047626	68.14.07.382.1		4.17.1	1Cx25sq.mm Y/G Earth cable	Each	150	Rev. A		
98	Earthing	1000047994	68.77.02.126.9		4.17.1	Earth Boss	Each	50	Rev. A		
99	Earthing	1000063796	81.41.17.018.1		4.17.1	M10 Carbon Steel Nut	Each	50	Rev. A		
107	Earthing	1000062587	78.39.10.104.1		4.17.1	12mm Round MS Bar	Metre	50	Rev. A		
108	Junction Box				4.16.6	Electrical Junction Box consists of 8 nos of 240 sq.mm terminal blocks, 8 nos of 50 sq.mm terminal blocks & 1x70 sq,mm + 2x25 sq.mm earth terminal blocks suitable for Hazardous area	Each	1	Rev. A		PAIP00405/RQ/402
109	Junction Box	1000396451			4.16.6	Electrical Junction Box consists of 8 nos of 6 sq.mm terminal blocks, 8 nos of 2.5 sq.mm terminal blocks & 1x25 sq,mm + 3x2.5 sq.mm earth terminal blocks suitable for Hazardous area	Each	10	Rev. A		
110	Lighting Pole	1000048607	~ ~		4.19.9	Flood Lighting Pole as Drg. STD-4-0203-001, 10M, Height Stepped Steel pole	Each	8	Rev. A		
111	Lighting Pole				4.19.5	Lighting Pole Type-5 as Drg. STD-4-0207-002	Each	2	Rev. A		
112	Lighting	1090000515			4.19.9	Flood Light Crossarm for 2-Way flood light bracket as Drg. STD-4-0205-001	Each	8	Rev. A		
113	Lighting	1000326313	69.6122.250.9		4.19.5	250W Floodlight fitting complete with control gear and p.f improvement capacitor with H.P Sodium vapour lamp	Each	16	Rev. A		
114	Lighting	1090003156			4.19.5	2x36W Flourescent Light fittings, EEXe IP-55, normal type, Pole mounted	Each	2	Rev. A		
115	Socket Outlet	1000069601			4.11.7	240V 16A 2Pole+PE socket outlet suitable for Hazardous area	Each	1	Rev. A		
116	RCU	1000046062	67.92.61.132.1		4.11.3	Remote control unit 50/1A CT Operated 0-50A Ammeter	Each	2	Rev. A		
117	RCU	1000070070	67.92.61.104.1		4.11.3	Remote control unit 5/1A direct Ammeter 0-5A (RCU shall be suitable for 7Cx2.5 sq.mm Incoming cable & 3Cx2.5 sq.mm Outgoing cable) including 2 nos of M20 glands.	Each	2	Rev. A		
						INSTALLATION MATERIALS FOR RCU AS PER DRG STD-4-0109-001-4-D	<u> </u>				
118	Access	1000052011	74086.05.345.9		4.20	50mm Heavy Gauge PVC Pipe	Metre	2	Rev. A		
119	Access	1000052014	74.86.05.570.9		4.20	110mm Heavy Gauge PVC Pipe	Metre	2	Rev. A		
120	Access	1000145612	78.47.31.053.1		4.20	100mm x 50mm x 6mm MS Channel	Metre	8	Rev. A		
121	Access	1000542348			4.20	Galvanised Cable Saddle, 20mm DIA	Each	16	Rev. A		
122	Access	1000062976	81.26.25.112.1		4.20	M10 x 100mm Expanding Bolt	Each	8	Rev. A		
123	Access	1000062606	-		4.20	6mm MS Plate, size 300mm x 300mm	Each	4	Rev. A		
								<u> </u>			
			I	L	i	1	<u> </u>	1			

## WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System Upgrade Disc:Electrical

Serial Number	Туре	SAP#	MESC #	WPAI Spec #	AVME#	Description	NOM	Total Quantity	Rev#	Additional Qty. to be Procured	MTO Rev ( Remarks	‡ :A
124	Cathodic Protection						Set	10	Rev. A			ĺ

# PAIP00405- Nimr Sludge Pit Up gradation MTO- Pipeline



#### PIPELINE BULK MATERIAL TAKE OFF (MTO) - SUMMARY [FINAL]

WORLEYPARSONS - ARABIAN INDUSTRIES JV

Job/ Project No: Project Titile: PAIP00405

NIMR SLUDGE PITS SYSTEMS UPGRADE-FEED/DD

Client Ref: MTO Document No: C.OM.NIM.IN.09.011 NIM-3-2134-001-DQ Location/ Area: NSPS+NRPS

PDO Project Code: DQ [For Main project]

Scope of MTO: ON-PLOT/OFF-PLOT (Under B31.4 Code Break Limit)

MTO Rev No/Date: A / 17-JUL-2011

MIC	Document No:	MTO Rev No/Date: A / 17-JUL-2011												
SL/ NO.	Material Reqn. & Spec'n (MRS) document Number	SAP / MESC Number	Applicable Piping Class	Line-Item Description	Material with Specification and Grade	Schedule/WT / Rating	Size 1	Size 2	Required Qty,	With Contgy. Qty.	Qty, Ordered before / Qty. In Stock	Qty. to be Ordered [Note-2]	Surpluss(±) Less(-)	Scope of Suppl
1	1000671556	NON-MESC.	300#	PIPE: SOUR, CS, BW, HFW CS, BARE, SHALL BE IN ACCORDANCE WITH DEP 31.40.20.37.GEN., SOUR FOR A/G APPLICATIONS.	ISO 3183 3 Cr. I 200	5.6 mm W.T.	150		3090	3650	-	-		By PDO (from Ex-stock)
2	1000671556	NON MESC	300#	PIPE: SOUR, CS, BW, HFW. CS, BARE, SHALL BE IN ACCORDANCE WITH DEP 31.40.20.37.GEN., SOUR FOR B/G APPLICATIONS.		5.6 mm W.T.	150		352	425	-	-		By PDO (from Ex-stock)
3	PAIP00405/RQ/6002 (L/I#001)	NON-MESC.	300#	BARRED TEE: EQUAL, BW, SOUR, CS, BEVELLED ENDS, TO BE IN ACORD. WITH DEP 31,40,21,30,GEN,& REF, SPEC'N FOR MORE DETAILS.	(50) 15090-2 Gr. L290	5,6 mm W.T. (at ends)	150		2	2	-	2	-	By PDO
4	PAIP00405/RQ/6004 (L/I#001)	NON-MESC.	300#	BRANCH FITTING (BROB): BRANCH OUTLET/WELDOLET, BW, CS, AS PER DEP 31.40.21.30.GEN & MSS SP 97 AND REF. SPEC'N FOR MORE DETAILS.	ISO 15590-2 Gr. L290 (EQUIVALENT TO MSS SP 75 WPHY 42)	W.T.5.6 x S80 (at ends)	150	50	45	52	-	52	*	By PDO
5	PAIP00405/RQ/6003 (L/I#001)	NON-MESC.	300#	FLANGE: CL 300#, WNRF, SOUR, FORGED, BARE, SEAL FACE 3.2-6.4 RA, AS PER DEP.31.40.21.34 AND REF. SPEC'N FOR MORE DETAILS.	ISO 15590-3 Gr. L290 (EQUIVALENT TO ASTM A694 Gr. F42)	300#	150		56	64		64	-	By PDO
6	PAIP00405/RQ/6003 (L/I#002)	NON-MESC.	300#	FLANGE: CL 300#, WNRF, SOUR, FORGED, BARE, SEAL FACE 3.2-6.4 RA, AS PER DEP.31.40.21.34 AND REF. SPEC'N FOR MORE DETAILS.	ISO 15590-3 Gr. L290 (EQUIVALENT TO ASTM A694 Gr. F42)	300#	50		45	52	-	52	-	By PDO
7	PAIP00405/RQ/6007 (L/I#001)	NON-MESC.	300#	BALL VALVE FB FLGD.	REF. REQ'N & SPEC'N	300#	150		4	4	-	4	-	By PDO
8	PAIP00405/RQ/6009	NON-MESC.	300#	THERMAL EXPANSION RELIEF VALVE FLGD. (48-RV-0396,0397,0398)	REF. REQ'N & SPEC'N	150# X 300#	25	50	3	3		3		By PDO
9	PAIP00405/RQ/6008	NON-MESC.		SLIMLINE VALVE: 2" X 2", CL 300#, SBB, MODULAR TYPE, FB, BOTH END FLANGED RF, NACE MR- 0175/ISO 15156.	REF. REQ'N & SPEC'N	300#	50	50	6	6	44	6	-	By PDO
10	PAIP00405/RQ/6005	NON-MESC.	300#	PIG SIGNALLERS: NON-INTRUSIVE TYPE, CLAMP ON/ STRAP-ON TYPE CONN, TO BE INSTALLED ON PIG TRAP & PIPELINE. (48-XI-2338,48-XI-2339,48-XI-2340 & 48-XI-2341)	REF. REQ'N & SPEC'N	300#	150		4	4	-	4	-	By PDO



#### PIPELINE BULK MATERIAL TAKE OFF (MTO) - SUMMARY [FINAL]

WORLEYPARSONS - ARABIAN INDUSTRIES JV

Job/ Project No: Project Titile: PAIP00405

NIMR SLUDGE PITS SYSTEMS UPGRADE-FEED/DD

Client Ref:

Ref:

C.OM.NIM.IN.09.011

Location/ Area: NSPS+NRPS

PDO Project Code: DQ [For Main project]

Scope of MTO: ON-PLOT/OFF-PLOT (Under B31.4 Code Break Limit)

MTO Rev No/Date: A / 17-JUL-2011

SAP / MESC Number	Applicable				C.Assaria	3/4/7-11-1-1	to the second		saggista Carrier Latteria			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Piping Class	Line-Item Description	Material with Specification and Grade	Schedule/WT / Rating	Size 1	Size 2	Required Qty.	With Contgy. Qty.	Qty. Ordered before / Qty. in Stock	Qty. to be Ordered [Note-2]		Scope of Suppl
NON-MESC.	300#	PIG TRAPS - LAUNCHER (A-48305): CL 300# Ø 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM	REF. REQ'N & SPEC'N	_	200	150	1	1	-	1	-	By PDO
NON-MESC.	300#	PIG TRAPS - RECEIVER (A-48306): CL 300# Ø 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM.	REF. REQ'N & SPEC'N	-	200	150	1	1	-	1	_	By PDO
NON-MESC.	300#	HDPE-LINER	REF. REQ'N & SPEC'N	BY-VENDOR	150		3615	4280	-	4280	1	By Cont'r
8546034401	300#	INSULATING GASKET	GRE G10	300#	150		2	2		2	-	By Cont'r
8546033951	300#	INSULATING GASKET	GRE G10	\$80\$/300#	50		12	12		12		By Cont'r
8138662731	31440	STUD BOLT WITH NUTS (8 No's/JT)	ASTM A193-B7M/A194-2HM	300#	0.625	100	96	144	-	144	-	By Cont'r
8138663351	31440	STUD BOLT WITH NUTS (12 No's/JT)	ASTM A193-B7M/A194-2HM	300#	0.75	140	24	36	-	36	-	By Cont'r
8138663371	31440	STUD BOLT WITH NUTS (12 No's/JT)	ASTM A193-B7M/A194-2HM	300#	0.75	150	120	180	-	180	-	By Cont'r
8138663381	31440	STUD BOLT WITH NUTS (12 No's/JT)	ASTM A193-B7M/A194-2HM	300#	0.75	160	24	36	-	36	-	By Cont'r
8138663411			ASTM A193-B7M/A194-2HM	300#	0.75	180	264	396	-	396		By Cont'r
	NON-MESC.  8546034401  8546033951  8138663351  8138663371  8138663381	NON-MESC. 300#  NON-MESC. 300#  8546034401 300#  8546033951 300#  8138662731 31440  8138663351 31440  8138663381 31440	NON-MESC.   300#	NON-MESC.   300#   CL 300#   Ø 8" × 6", WITH END CLOSURE AND PIG LOADING SYSTEM	NON-MESC.   300#	NON-MESC.         300#         CL 300# Ø 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM         REF. REQ'N & SPEC'N         -         200           NON-MESC.         300#         PIG TRAPS - RECEIVER (A-48306): CL 300# Ø 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM.         REF. REQ'N & SPEC'N         -         200           NON-MESC.         300#         HDPE-LINER         REF. REQ'N & SPEC'N         BY-VENDOR         150           8546034401         300#         INSULATING GASKET         GRE G10         300#         150           8546033951         300#         INSULATING GASKET         GRE G10         S80S/300#         50           8138662731         31440         STUD BOLT WITH NUTS (8 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.625           8138663351         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75           8138663381         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75           8138663411         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75           8138663411         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75	NON-MESC.       300#       CL 300# Ø B" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM       REF. REQ'N & SPEC'N       -       200       150         NON-MESC.       300#       PIG TRAPS - RECEIVER (A-48306). CL 300# Ø B" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM.       REF. REQ'N & SPEC'N       -       200       150         NON-MESC.       300#       HDPE-LINER       REF. REQ'N & SPEC'N       BY-VENDOR       150         8546034401       300#       INSULATING GASKET       GRE G10       300#       150         8546033951       300#       INSULATING GASKET       GRE G10       \$805/300#       50         8138663731       31440       STUD BOLT WITH NUTS (8 No's/JT)       ASTM A193-B7M/A194-2HM       300#       0.625       100         8138663371       31440       STUD BOLT WITH NUTS (12 No's/JT)       ASTM A193-B7M/A194-2HM       300#       0.75       150         8138663381       31440       STUD BOLT WITH NUTS (12 No's/JT)       ASTM A193-B7M/A194-2HM       300#       0.75       160         8138663411       31440       STUD BOLT WITH NUTS (12 No's/JT)       ASTM A193-B7M/A194-2HM       300#       0.75       180	NON-MESC.         300#         CL 300# Ø B° x 6°, WITH END CLOSURE AND PIG LOADING SYSTEM         REF. REQ'N & SPEC'N         -         200         150         1           NON-MESC.         300#         PIG TRAPS - RECEIVER (A-48306): CL 300# Ø B° x 6°, WITH END CLOSURE AND PIG LOADING SYSTEM.         REF. REQ'N & SPEC'N         -         200         150         1           NON-MESC.         300#         HDPE-LINER         REF. REQ'N & SPEC'N         BY-VENDOR         150         3615           8546034401         300#         INSULATING GASKET         GRE G10         300#         150         2           8546033951         300#         INSULATING GASKET         GRE G10         S805/300#         50         12           8138663731         31440         STUD BOLT WITH NUTS (8 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.625         100         96           8138663371         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         150         120           8138663381         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         160         24           8138663411         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM	NON-MESC.         300#         CL 300# Ø B" x 6", WiTH END CLOADING SYSTEM         REF. REQ'N & SPEC'N         -         200         150         1         1           NON-MESC.         300#         Cl 300# Ø B" x 6", WITH END CLOADING SYSTEM.         REF. REQ'N & SPEC'N         -         200         150         1         1           NON-MESC.         300#         HDPE-LINER         REF. REQ'N & SPEC'N         BY-VENDOR         150         1         1           8546034401         300#         INSULATING GASKET         GRE G10         300#         150         2         2           8138662731         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.625         100         96         144           8138663371         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         150         120         180           8138663381         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         160         24         36           8138663411         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         160         24         36	NON-MESC.         300#         CL 300# Ø 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM.         REF. REQ'N & SPEC'N         -         200         150         1         1         -           NON-MESC.         300#         PIG TRAPS - RECEIVER (A-48306): CL 300# Ø 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM.         REF. REQ'N & SPEC'N         -         200         150         1         1         -           NON-MESC.         300#         HDPE-LINER         REF. REQ'N & SPEC'N         BY-VENDOR         150         3615         4280         -           8546034401         300#         INSULATING GASKET         GRE G10         300#         150         2         2         -           8138662731         31440         STUD BOLT WITH NUTS (8 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.625         100         96         144         -           8138663371         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         150         120         180         -           8138663381         31440         STUD BOLT WITH NUTS (12 No's/JT)         ASTM A193-B7M/A194-2HM         300#         0.75         160         24         36         -           81386633411         31440         STUD BOLT	NON-MESC.   300#   CL 300# Q 8" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM   REF.REQN & SPECN   - 200   150   1   1   1   - 1   1   1   1   1   1	NON-MESC. 300# CL 300# Ø B" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM PIG TRAPS - RECEIVER (A-48306); CL 300# Ø B" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM PIG TRAPS - RECEIVER (A-48306); CL 300# Ø B" x 6", WITH END CLOSURE AND PIG LOADING SYSTEM.  NON-MESC. 300# HDPE-LINER REF. REQ'N & SPEC'N BY-VENDOR 150 1 1 1 1 . 1 . 1

Prepared by:

Date:

Checked by :

Date:

Approved by :

Revision details:

The Revised Line-items including " Quantity to be Ordered" are indicated in ITALIC BOLD BLUE FONTS with YELLOW Highlight (S/N # 4,5,6 & 20) as part of Rev.-A.

- 1. Pipe Quantity's are in meters and for all other item's Quantity's are in numbers.
- 2. The Line-items and quantities indicated in this MTO are preliminary based on PEFS package prior to AFC issue and this MTO is issued for the purpose of enquiry/procurement by PDO or by Construction contractor. However, the final required line-items and quantities for the project will be issued along with AFC-Piping GAD package at a later stage.

3. Stopaq wrap tape, Pipeline Marker's, Name plates and any other materials which is not indicated in this MTO required for the successful completion of the project shall be estimated and supplied by the Construction contractor.

4. Length of Stud bolts to be confirmed upon the receipt of Retainer Ring dimensions for all the PE/ROTO-Lined pipe spools/joints prior to the placement of order,

APPROVED FOR CONSTRUCTION



Project Titile:

#### PIPELINE BULK MATERIAL TAKE OFF (MTO) - SUMMARY [FINAL]

WORLEYPARSONS - ARABIAN INDUSTRIES JV

Job/ Project No: PAIP00405

NIMR SLUDGE PITS SYSTEMS UPGRADE-FEED/DD

Client Ref; C.OM.NIM.IN.09.011 MTO Document No:

NIM-3-2135-001-DQ

Location/ Area: NSPS+NRPS

PDO Project Code: DQ [For Main project]

Scope of MTO: <u>ON-PLOT/OFF-PLOT</u> (Under B31.3 Code Break Limit) MTO Rev No/Date: A / 17-JUL-2011

мто	O Document No: NIM-3-2135-001-DQ						MTO Rev No/Date: A / 17-JUL-2011									
SL/ NO.	Material Reyn, & Spec'n (MRS) document Number	SAP / MESC Number	Applicable Piping Class	Line-Item Description	Material with Specification and Grade	Schedule/WT / Rating	Size 1	Size 2	Required Qty.	With Contgy, Qty.	Qty. Ordered before / Qty. in Stock	Qty. to be Ordered [Note-2]	Surpluss(+) Less(-)	Scope of Supply		
1	1000051896	7436330181	33421	PIPE	ASTM A312-TP316L	S 40S	15		43.0	54.0	-	54.0	-	By Cont'r		
2	1000051711	7430030711	31440	PIPE	ASTM A106-B	S80	50		80.5	96.0		96.0	-	By Cont'r		
3	1000051902	7436330571	33421	PIPE	ASTM A312-TP316L	S 10S	50		4.5	6.0	-	6.0	-	By Cont'r		
4	1000051718	7430031491	31440	PIPE	ASTM A106-B	S40	100		41,5	54	•	54	-	By Cont'r		
5	1000051722	7430032111	31440	PIPE	ASTM A106-B	S40	150		32.0	42.0	-	42.0	-	By Cont'r		
6	1000052962	7630426081	31440	ELBOW 90DEG BW	ASTM A234-WPB	S80	50		45	54	-	54	-	By Cont'r		
7	1000052968	7630426451	31440	ELBOW 90DEG BW	ASTM A234-WPB	S40	100		10	12	-	12	-	By Cont'r		
8	1000052973	7630426651	31440	ELBOW 90DEG BW	ASTM A234-WPB	S40	150		2	2	-	2	-	By Cont'r		
9	1000053750	7630816081	31440	EQUAL TEE BW	ASTM A234-WPB	S80	50	A	13	16		16	a .	By Cont'r		
10	1000069003	7630881571	31440	REDUCING TEE BW	ASTM A234-WPB	S40 x S80	100	50	17	20	-	20	•	By Cant'r		
11	1000074733	7630881891	31440	REDUCING TEE BW	ASTM A234-WPB	S40 × S40	150	100	2	2	•	2	-	By Cont'r		
12	PAIP00405/RQ/6004	NON-MESC.	3000#	CAP THREADED (FNPT)	ASTM A182 F316, MSS SP 75	3000#	15		45	72		72	***************************************	By Cont'r		
13	1000071043	7630672661	11440	REDUCER ECC.BW	ASTM A234-WPB	S40 × S80	100	50	1	1	-	1	-	By Cont'r		
14	1000055288	7633705791	33421	REDUCER CONC.BW	ASTM A403-WP316L	5105 × S40S	25	15	45	52	-	52	-	By Cont'r		
15	1000055295	7633706341	33421	REDUCER CONC.BW	ASTM A403-WP316L	S 10S× S 10S	50	25	50	58	•	58	-	By Cont'r		
16	1000057461	7679010641	31440	BRANCH OUTLET BW	ASTM A105	S40 × S80	150	50	8	10	-	10	·	By Cont'r		
17	1000057154	7665804021	33421	WELD NECK FLANGE RF	ASTM A182-F316	S 405	15		90	104	-	104	_	By Cont'r		
18	1000057141	7665794061	33421	WELD NECK FLANGE RF	ASTM A182-F316	S 10S	25		5	6	-	6	-	By Cont'r		
19	1000056463	7662783601	11440	WELD NECK FLANGE RF	ASTM A105	S80	50		16	19	-	19	-	By Cont'r		
20	1000056500	7662786101	31440	WELD NECK FLANGE RF	ASTM A105	S80	50		124	149	#	149	***************************************	By Cont'r		
21	1000057143	7665794101	33421	WELD NECK FLANGE RF	ASTM A182-F316	S 10S	50		50	58	·	58		By Cont'r		
22	1000056452	7662783141	11440	WELD NECK FLANGE RF	ASTM A105	S40	100		6	7		7		By Cont'r		
23	1000056486	7662785641	31440	WELD NECK FLANGE RF	ASTM A105	S40	100	Ten to the ten	30	36	-	36	-	By Cont'r		



#### PIPELINE BULK MATERIAL TAKE OFF (MTO) - SUMMARY [FINAL]

WORLEYPARSONS - ARABIAN INDUSTRIES JV

Job/ Project No: PAIP00405 Project Titile:

NIMR SLUDGE PITS SYSTEMS UPGRADE-FEED/DD

Client Ref: C.OM. NIM.IN.09.011

MTO Document No: NIM-3-2135-001-DQ Location/ Area: NSPS+NRPS

PDO Project Code: DQ [For Main project]

Scope of MTO: <u>ON-PLOT/OFF-PLOT</u> (Under B31.3 Code Break Limit) MTO Rev No/Date: A / 17-JUL-2011

WIOL	ocument No;	//////////////////////////////////////					MTO Key No/Date: A / 1/-JUL-2011							
SL/ NO.	Material Regn. & Spec'n (MRS) document Number	SAP / MESC Number	Applicable Piping Class	Line-Item Description	Material with Specification and Grade	Schedule/WT / Rating	Size 1	Size 2	Required Qty.	With Contgy, Qty.	Qty. Ordered before / Qty. in Stock	Qty. to be Ordered [Note-2]	Surpluss(+) Less(-)	Scope of Supply
24	1000056487	7662785661	31440	WELD NECK FLANGE RF	ASTM A105	S40	150		19	23	-	23	-	By Cont'r
25	1000056181	7662110701	11440	BLIND FLANGE	ASTM A105	150#	50		1	1	-	1	-	By Cont'r
26	1000056198	7662111201	31440	BLIND FLANGE	ASTM A105	300#	50		12	14	-	14	= - -	By Cont'r
27	1000056200	7662111241	31440	BLIND FLANGE	ASTM A105	300#	100		2	2	-	2	~	By Cont'r
28	1000059283	7688370501	31440	SPECTACLÉ BLIND	ASTM A516-60/65/70	300#	50		3	4	-	4	-	By Cont'r
29	1000059285	7688370541	31440	SPECTACLE BLIND	ASTM A516-60/65/70	300#	100		2	2		2	#	By Cont'r
30	1000064408	8541364041	33421	GASKET SPIRAL WOUND	AISI 316, graphite filled CS centring-/SS inner ring	300#	15		92	184	*	184		By Cont'r
31	1000064410	8541364081	33421	GASKET SPIRAL WOUND	AISI 316, graphite filled CS centring-/SS inner ring	300#	25		5	10	-	10	-	By Cont'r
32	1000064370	8541363141	11440	GASKET SPIRAL WOUND	AISI 316, graphite filled CS centring-/SS inner ring	150#	50		4	В	-	8	*	By Cont'r
33	1000064412	8541364141	31440	GASKET SPIRAL WOUND	AISI 316, graphite filled CS centring-/SS inner ring	300#	50		1	2	-	2	_	By Cont'r
34	1000064372	8541363201	11440	GASKET SPIRAL WOUND	AISI 316, graphite filled CS centring-/SS inner ring	150#	100	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2	4	74	4	-	By Cont'r
35	1000206450	8546030661	150#	INSULATING GASKET	GRE G10	S80-150#	50		11	11	-	11	-	By Cont'r
36	1000200927	8546033911	300#	INSULATING GASKET	GRE G10	S10S/300#	50		47	- 47	=	47	•	By Cont'r
37	1000200952	8546033961	300#	INSULATING GASKET	GRE G10	S80-300#	50		12	12	-	12	-	By Cont'r
38	1000206503	8546030941	150#	INSULATING GASKET	GRE G10	S40-150#	100		1	1	-	1	-	By Cont'r
39	1000200951	8546033941	300#	INSULATING GASKET	GRE G10	S40/300#	100		4	4	-	4	-	By Cont'r
40	-	7703450081	13842	BALL VALVE FLOAT RB FLGD	Body: ASTM A182-F55/A890-6A Trim: Super Duplex, PTFE	150#	50	100	2	2	*	2	-	By Cont'r
41	-	7703453581	33842	BALL VALVE FLOAT RB FLGD	Body: ASTM A182-F55/A890-6A Trim: Super Duplex, PTFE	300#	50		24	24	-	24	-	By Cont'r
42	-	7703660621	33842	BALL VALVE TRUNN RB FLGD	Body; ASTM A182-F55/A890-6A Trim: Super Duplex, filled PTFE	300#	100		4	4	-	4	-	By Cont'r
43	-	7733430531	33842	GLOBE VALVE FLGD	Body: ASTM A182-F55/A890-6A Trim: Super Duplex	300#	15		46	51	-	51	-	By Cont'r
44	-	7733430581	33842	GLOBE VALVE FLGD	Body: ASTM A182-F55/A890-6A Trim: Super Duplex	300#	50		3	3		3	-	By Cont'r
45	-	7713420081	13842	CHECK VALVE FLGD	Body: ASTM A182-F55/A890-6A Trim: Super Duplex	150#	50		2	2	-	2	-	By Cont'r



#### PIPELINE BULK MATERIAL TAKE OFF (MTO) - SUMMARY [FINAL]

WORLEYPARSONS - ARABIAN INDUSTRIES JV PAIP00405 Location/ Area: NSPS+NRPS Job/ Project No: NIMR SLUDGE PITS SYSTEMS UPGRADE-FEED/DD Project Titile: PDO Project Code: DQ [For Main project] Client Ref: C.OM.NIM.IN.09.011 Scope of MTO: ON-PLOT/OFF-PLOT (Under B31.3 Code Break Limit) MTO Document No: NIM-3-2135-001-DQ MTO Rev No/Date: A / 17-JUL-2011 Material Regn. & Qty, Ordered Surpluss(+) Applicable Spec'n (MRS) SAP / MESC Schedule/W Required With Qty. to be Ordered Piping Line-Item Description Material with Specification and Grade Size 1 Size 2 before /. Less(-) Scope of Supply / Rating NO. document Number Qty. Contgy, Qty, [Note-2] Class Qty. in Stock Number Body: ASTM A182-F55/A890-6A 50 4 46 7713420581 33842 CHECK VALVE FLGD 300# 4 By Cont'r Trim: Super Duplex THERMAL EXPANSION RELIEF VALVE, 47 PAIP00405/RQ/6009 NON-MESC. 300# REF. REQ'N & SPEC'N 300# 25 50 2 2 2 By Cont'r FLGD. (48-RV-0547, 48-RV-0548) 1000063457 48 8138661551 33421 STUD BOLT WITH NUTS (4 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.5 70 360 540 540 By Cont'r (NOTE-3) 1000063469 49 300# 0.625 80 12 18 18 By Cont'r 8138662691 33421 STUD BOLT WITH NUTS (4 No's/JT) ASTM A193-B7M/A 194-2HM (NOTE-3) 1000063471 0.625 36 36 50 8138662711 300# 24 By Cont'r 31440 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 90 (NOTE-3) 1000063473 1512 51 8138662731 31440 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.625 100 1008 1512 By Cont'r (NOTE-3) 1000063474 52 8138662741 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.625 110 312 468 468 By Cont'r (NOTE-3) 1000063475 53 0.625 24 36 36 8138662761 31440 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 300# 120 By Cont'r (NOTE-3) 1000063493 54 8138663341 31440 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.75 130 8 12 12 By Contin (NOTE-3) 1000063494 55 8138663351 31440 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.75 140 144 216 216 By Cont'r (NOTE-3) 1000063496 56 8138663371 31440 STUD BOLT WITH NUTS (8 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.75 150 92 138 138 By Cont'r (NOTE-3) 1000063497 57 8138663381 31440 STUD BOLT WITH NUTS (12 No's/JT) ASTM A193-B7M/A194-2HM 300# 0.75 160 44 66 66 By Cont'r (NOTE-3) 58 PAIP00405/RQ/6013 7353160449 150# ELAFLEX COUPLING cs 150# 100 1 1 By Cont'r Prepared by: Checked by : Approved by: Date: Date: Date: Revision details: The Revised Line-items including "Quantity to be Ordered" are indicated in ITALIC BOLD BLUE FONTS with YELLOW Highlight (S/N # 1,12,14,15,17,21,30,36,43,48 & 51) as part of Rev.-A. 1. Pipe Quantity's are in meters and for all other item's Quantity's are in numbers. 2. The Line items and quantities indicated in this MTO are preliminary based on PEFS package prior to AFC issue and this MTO is issued for the purpose of enquiry/procurement by APPROVED FOR CONSTRUCTION PDO or by Construction contractor. However, the final required line items and quantities for the project will be issued along with AFC Piping GAD package at a later stage. 3. Length of Stud bolts to be confirmed upon the receipt of Retainer Ring dimensions for all the PE/ROTO-Lined pipe spools/joints prior to the placement of order,

# PAIP00405- Nimr Sludge Pit Up gradation MTO- C&A

#### MTO FOR NIMR SLUDGE PITS SYSTEM UPGR

				na programa					
1 302	2 1000049076	70.13.04.025.1		HEAVY GAUGE CONDUIT	GALV. STEEL	25mm Dia	Mtrs	15.00	
2 L	1000047736	XX.XX.XX,XXX.X		CABLE XLPEI-MS-SWA-PVCS, BLACK		2 x2.5 mm2	Mtrs	250.00	
3 0	1000405299	XX.XX.XX.XX		CABLE XLPEI-MS-SWA-PVCS, BLACK		2 x 2 x 1.13 mm	Mtrs	1000.00	
4 P	1000405297	XX.XX.XX.XXX.X	37.020	CBL ELEC ARM FIRE 24V 10PAIR 0.5MM2		10 x 2 x 0.8 mm	Mtrs	1300.00	BS5308, PART 1, TYPE2
5 R		XX.XX.XX.XXX.X		CABLE SHRINK ON SLEEVE (BLUE)	POLYOLEFIN	19 ~ 6 mm	-	NOTE-1	
6 X		68.80.58.068.1	07.110	LOCK NUT	BRASS	M20	Pcs	30.00	200010
7 Y	1000048277	68.80.58.072.9	37.110	NUT LCK HEX BRASS MTR 25MM	BRASS	M25	Pcs	12.00	BS3643
8 AA	1000048319	68.80.58.730.1		CABLE GLAND 501/453-0	BRASS	M20	Pcs	53.00	
9 AB		68.80.58.734.1	37.110	GLND CBL W/FLMPROF PVC SWA BS6121/25	BRASS	M25	Pcs	12.00	BS6121, TYPE E1 WF
10 AD	1000048327	68.80.58.802.9		GLND CBL ADPT 1/2"NPT 20MM	BRASS	½" NPTxM20	Pcs	8.00	
11 AP		74.13.10.069.9		PIPE MET API 5L-B 40 DN50	CARBON STEEL	2"	Mtrs	17.00	
12 AC	10000211233	74.13.12.103.9	estada de la companione	PIPE MET API 5L-B 40 DN80	CARBON STEEL	3"	Pcs	3.00	
13 BP	1000106870	76.30.15.052.1		CAP PIPE BW WPB 80 DN50	CARBON STEEL	2"	Pcs	7.00	
14 BC		76.30.72.235.1		REC BW WPB 40 DN80X50	CARBON STEEL	3" x 2"	Pcs	3,00	
But a said									
15 CC		76.39.27.152.9	37.320	CONN TUBE CPT MAL 316 316 1/2X1/2"	AISI 316	1/2" NPT x 1/2" OD	Pcs	3.00	
16 CF		76.39.67.040.1	37.320	PLUG TUB CPT 316 1/4IN	AISI 316	1/4" NPT	Pcs	22.00	
17 CJ		78.39.02.121.1		FLAT BAR (6Mtrs LONG)	MILD STEEL	50 x 6 mm	Pcs	2.00	
18 CL		78,43,30,108.1 78,43,30,116.1		STEEL PLATE (2000x1000x3)  SHT PLT SLD MET 2000X1000 6MM	MILD STEEL MILD STEEL	3mm THICK 6 mm THK	Pcs Pcs	1.00	
20 CN		78.43.30.124.1	+	SHT PLT SLD MET 2000X1000 6MM	MILD STEEL	10 mm THK	Pcs	1.00	
21 CQ		78,47.01,352.1	<del>                                     </del>	ANGL MTL EQ STL 6M L50X50X6MM	MILD STEEL	50 x 50 x 6 mm	Pcs	3.00	
22 CR	1000000	74.48.50.073.9	37.310	TUBE MET INSTR 1/2IN 18SWG 0.048IN	AISI 316	1/2" OD	Mtrs	5.00	
23 CY	1000062961	81.01.77.192.1		BLT HEX CL.8.8 COARSE 60MM M10	CARBON STEEL	M10 x 60 mm	Pcs	5.00	
24 DA		81.26.25.133.1		BLT FND CL.4.6 MC 110MM M12	CARBON STEEL	M12 x 110 mm	Pcs	20.00	
25 DH 26 DU		81.41.77.018.1 81.26.86.022.9	<del> </del>	NUT MTR CL.8 HEX ISO 724 M10 U-BOLT FOR 1/2" PIPE C/W NUTS & SPRING WASHER	CARBON STEEL AISI 316	M10 M8	Pcs Pcs	5.00 16.00	
27 DV		81.26.86.040.9	+	U-BOLT DN50	AISI 316	M10	Pcs	. 41.00	
28 EA	1000048204	68.80.50.942.9		CABLE TIES 12/BLACK -		4x140 mm	-	NOTE-1	
29 EB		68.79.02.004.9		CARRIER STRIP BLACK 7 DIGITS			-	NOTE-1	
30 EC		68.79.02.004.9		CABLE MARKER TYPE KS		80		NOTE-1	
31 ED		68.79.02.018.1		PLAIN STRIP		250x19x1.6 mm		NOTE-1	
32 EE 33 EK		68.79.02.018.1 68.76.54.004.9		CORE MARKER MODLE ZS-5 CABLE CHANNEL 2M LONG	GI	D=1.5-2.0 mm 100 mm WIDE	Mtrs	NOTE-1 100.00	BS2989, GROUP2, CLASS-E
34 EO		68.76.54.052.9	<del>                                     </del>	CABLE CHANNEL BEND 90 DEG.	GI	100 mm WIDE	Pcs	50.00	BS2989, GROUP2, CLASS-E
35 ES		68.76.81.024.9		CABLE TILE		1000x244x6 mm	Pcs	250.00	Bazasa, arrasi z, acrisa z
(S) WHITE						endro en abadilida (			
36				NAME PLATE (AS PER NAME PLATE DETAILS)		(TYPE A & B)	Pcs	NOTE-2	
37				PRESSURE TRANSMITTER	NOTE-3	-	Pcs	1.00	
38				PRESSURE GAUGE DIFFERENTIAL PRESSURE TRANSMITTER	NOTE-3	-	Pcs	9,00	
40			<del>                                     </del>	RADR LEVEL TRANSMITTER	NOTE-3 NOTE-3	-	Pcs Pcs	4.00	
41			1	TEMPERATURE TRANSMITTER	NOTE-3	-	Pcs	1.00	
42				ULTRASONC FLOW METER (STRAP-ON TYPE)	NOTE-3	-	Pcs	1.00	
43	100-22-22	20.01.02.222.2		PNEUMATIC On-Off VALVE, RB, 6", 300#	NOTE-3		Pcs	1.00	
44 45	1000039291	60.04.69.302.9		PUSH BUTTON, EFS-110 HEAT DETECTOR	NOTE-3	-	Pcs Pcs	5.00 2.00	1
46			<del>                                     </del>	LEVEL GAUGE	NOTE-3	-	Pcs	1.00	
47				HOOTER (AUDIBLE ALARM)	NOTE-3	-	Pcs	1.00	-
48	1000047918	68.76.40.014.9		JUNCTION BOX EEx II T6		20 TERMINALS	Pcs	3.00	
50				RTU WITH RADIO MODULE	NOTE-4				
51 NOTE 1	1 - OHANTITIES TO S	DE DETERMINED AND	MATERIAL	GATEWAY	NOTE-4			ļ	
		No. NIM -5-4739-DQ-		TO BE SUPPLIED BY CONSTRUCTION CONTRACTOR.					
		ATION PREPARED U		PROJECT.				-	1
	: FREE ISSUE BY P							1	

# PAIP00405- Nimr Sludge Pit Up gradation MTO- Mechanical

Job Number: PAIP00405

Contigency Status: Final

Job Title: Nimr Sludge Pits System upgrade - FED & DD

Area: NIMR

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1000070920 7630671931 31440 Reducer Ecc.Bw

1000053750 7630816081 31440 Equal Tee Bw

1000053754 7630816281 11440 Equal Tee Bw

1000053756 7630816451 11440 Equal Tee Bw

1000053760 7630816651 31440X Equal Tee Bw

1000069003 7630881571 11440 Tee Reducing Bw

1000074733 7630881891 31440X Tee Reducing Bw

ASTM A234-WPB

S80 15 0.5 0 6 0 1000051514 7413080181 18011 Pipe API 5L-B (galvanised) 1000051518 7413080281 18011 Pipe API 5L-B (galvanised) S80 25 0.5 Ω 1000051700 7430030201 31440 Pipe ASTM A106-B S160 15 0 4 6 Λ 228 30 1000051711 7430030711 31440 Pipe ASTM A106-B S80 50 0 168.7 198 12 n 1000051715 7430031091 11440 Pipe ASTM A106-B S80 80 6 30 138 100 92.5 108 1000051718 7430031491 11440 Pipe ASTM A106-B S40 282 150 298.5 348 1000051722 7430032111 31440X Pipe ASTM A106-B S 40 n 1.5 1000051781 7430050281 11412 Pipe ASTM A106-B S80 20 ٥ ASTM A106-B S20 350 0 16 18 1000072413 7430053731 11412 Pipe 1000051896 7436330181 33411 Pipe ASTM A312-TP316L S40S 15 0 10 18 11 1000051897 7436330261 33411 Pipe ASTM A312-TP316L S40S 20 1000051898 7436330331 33421 Pipe ASTM A312-TP316L S10S 25 12 13 1000051902 7436330571 13411 Pipe **ASTM A312-TP316L** S10S 50 0 12 14 1000052326 7606280161 18011 Coupling Thrd ASTM A234-WPB (galvanised) S80 25 0 0 n 15 1000052340 7606390081 18011 Elbow 90 Deg Thrd ASTM A234-WPB (galvanised) \$80 15 Ω S80 15 16 1000052400 7606660081 18011 Plug Npt ASTM A234-WPB (galvanised) 0 25 15 ASTM A234-WPB (galvanised) S80 × S80 17 1000052433 7606850341 18011 Tee Reducing Thrd ASTM A234-WPB (galvanised) S80 25 0 18 1000052451 7606910161 18011 Union Thrd 19 1000124172 7629461921 11412 Reducer Conc.Bw ASTM A234-WPB S40 × S80 50 20 0 1000052727 7630346081 31440X Elbow 45 Deg Bw ASTM A234-WPB S 80 50 2 0 0 20 21 1000052737 7630346651 31440X Elbow 45 Deg Bw ASTM A234-WPB S 40 150 0 0 22 1000052870 7630405741 11412 Elbow 90 Deg Bw ASTM A234-WPB S80 20 0 2 0 O 37 43 32 O 11 23 1000052951 7630425721 31440X Elbow 90 Deg Bw ASTM A234-WPB S 160 15 0 0 50 35 40 0 49 0 24 1000052962 7630426081\_31440\_Elbow 90\_Deg\_Bw ASTM A234-WPB S80 0 0 0 S80 80 25 1000052966 7630426281 11440 Elbow 90 Deg Bw ASTM A234-WPB 17 S40 100 0 12 14 0 0 26 1000052968 7630426451 11440 Elbow 90 Deg Bw ASTM A234-WPB 33 38 0 35 1000052973 7630426651 31440X Elbow 90 Deg Bw S 40 150 0 27 ASTM A234-WPB 50 0 0 1000053081 7630662371 11440 Reducer Conc.Bw ASTM A234-WPB S80 × S80 80 28 150 100 0 29 1000053100 7630663051 31440X Reducer Conc.Bw ASTM A234-WPB S 40 x S 40 S160 × S160 20 15 0 30 1000070912 7630671411 31440 Reducer Ecc.Bw ASTM A234-WPB

S80 × S160

\$80

\$80

S40

S 40

S40 × S80

S 40 x S 40

50

50

80

100

150

100 50

150 100

20

0

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Bulk Summary Doc. No.: NIM-3-2145-001-DQ

MTO Rev. No. : A

Date: 30-MAY-11

3	18 1	1000055078	7633412861 33421 Elbow 90 Deg Bw	ASTM A403-WP316L	S40S		15	0	0	0	0	5	0	5
3	39 1	1000055079	7633412961 33411 Elbow 90 Deg Bw	ASTM A403-WP316L	S40S		20	0	0	0	0	5	0	5
4	10 1	1000055085	7633413341 13411 Elbow 90 Deg Bw	ASTM A403-WP316L	S10S		50	0	0	0	0	10	0 1	10
4	1 1	1000055295	7633706341 33421 Reducer Conc.Bw	ASTM A403-WP316L	S10S× S10S		50	25	0	0	0	2	0	2
4	12 1	1000055560	7633856181 33411 Tee Reducing Bw	ASTM A403-WP316L	\$40\$× \$40\$		20	15	1	1	0	2	0	1
4	3 1	1000056181	7662110701 11440 Blind Flange	ASTM A105		150#	50	0	4	5	0	4	1	0
4	4 1	1000056182	7662110721 11440 Blind Flange	ASTM A105		150#	80	0	1	1	0	1	0	0
4	5 1	1000056183	7662110741 11440 Blind Flange	ASTM A105		150#	100	0	1	1	0	0	1	0
4	6 1	1000056198	7662111201 31440X Blind Flange	ASTM A105		300#	50	0	12	14	0	14	0	0
4	7 1	1000056200	7662111241 31440X Blind Flange	ASTM A105		300#	100	0	0	0	0	1	0	1
4	8 1	1000056201	7662111261 31440X Blind Flange	ASTM A105		300#	150	0	1	1	0	0	1	0
4	9 1	1000056309	7662203201 31440X Lap Joint Flange	ASTM A105		300#	50	0	1	1	0	1	0	0
5	0 1	1000056452	7662783141 11440 Weld Neck Rf Flange	ASTM A105	S40	150#	100	0	7	8	0	8	0	0
5	51 1	1000056463	7662783601 11440 Weld Neck Rf Flange	ASTM A105	S80	150#	50	0	17	20	0	25	0	5
5	52 1	000056464	7662783621 11440 Weld Neck Rf Flange	ASTM A105	S80	150#	80	0	5	6	0	6	0	0
5	3 1	1000056486	7662785641 31440X Weld Neck Rf Flange	ASTM A105	S 40	300#	100	0	1	1	0	18	0	17
5	54 1	1000056487	7662785661 31440X Weld Neck Rf Flange	ASTM A105	S 40	300#	150	0	153	176	0	132	44	0
5	5 1	1000056500	7662786101 31440X Weld Neck Rf Flange	ASTM A105	S 80	300#	50	0	94	108	0	158	0	50
5	6 1	000056510	7662786521 31440 Weld Neck Rf Flange	ASTM A105	S160	300#	15	0	28	32	0	7	25	0
5	7 1	1000056994	7665104121 33411 Blind Flange	ASTM A182-F316		300#	15	0	1	1	0	2	0	1
5	8 1	1000056995	7665104141 33411 Blind Flange	ASTM A182-F316		300#	20	0	1	1	0	1	0	0
5	9 1	1000057118	7665792101 13411 Weld Neck Rf Flange	ASTM A182-F316	S10S	150#	50	0	0	0	0	4	0	4
6	0 1	000057141	7665794061 33421 Weld Neck Rf Flange	ASTM A182-F316	S10S	300#	25	0	0	0	0	2	0	2
6	1 1	000057143	7665794101 33421 Weld Neck Rf Flange	ASTM A182-F316	S10S	300#	50	0	4	5	0	2	3	0
6	2 1	1000057154	7665804021 33411 Weld Neck Rf Flange	ASTM A182-F316	S40S	300#	15	0	1	1	0	5	0	4
6	3 1	1000057155	7665804041 33411 Weld Neck Rf Flange	ASTM A182-F316	S40S	300#	20	0	2	2	0	10	0	8
6	i4 1	1000057461	7679010641 31440X Branch Outlet Bw	ASTM A105	S 40 x S 80		150	50	29	33	0	30	3	0
6	55 1	1000058020	7680371211 31440X Branch Fitting Flgd	ASTM A105	S 160	300#	600	15	18	20	0	7	13	0
6	66 1	1000173022	7683385621 31440X Thermowell	ASTM B564 UNS N04400		150# / 250C	50	255	1	1	0	1	0	0
6	57 1	1000072195	7688370101 11440 Spectacle Blind	ASTM A516-60/65/70		150#	50	0	2	2	0	2	0	0
6	8 1	1000070269	7688370141 11440 Spectacle Blind	ASTM A516-60/65/70		150#	100	0	2	2	0	2	0	0
6	9 1	1000071500	7688370201 11440 Spectacle Blind	ASTM A516-60/65/70		150#	250	0	2	2	0	2	0	0
7	'0 1	1000059283	7688370501 31440X Spectacle Blind	ASTM A516-60/65/70		300#	50	0	7	8	0	6	2	0
7	1 1	1000059285	7688370541 31440X Spectacle Blind	ASTM A516-60/65/70		300#	100	0	0	0	0	1	0	1
7	'2 1	1000059286	7688370561 31440X Spectacle Blind	ASTM A516-60/65/70		300#	150	0	8	9	0	10	0	1
7	'3		7700250081 11440 Bail Valve RB Flgd.	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, PTFE		150#	50	0	3	3	0	4	0	1
7	'4		7700250101 11440 Ball Valve RB Flgd.	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, PTFE		150#	80	0	1	1	0	1	0	0
7	'5		7700250121 11440 Ball Valve RB Flgd.	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, PTFE		150#	100	0	2	2	0	2	0	0
7	'6 RQ/30	008	NON MESC 31440X Ball Valve 14313 RB	F Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	100	0	0	0	0	2	0	2
7	7		7703260081 13411 Ball Valve RB Flgd.	Body: ASTM A182-F316/A351-CF8M Trim: AISI 316, PTFE.		150#	50	0	0	0	0	1	0	1
7	78 RQ/30	008	NON MESC 11440X Ball Valve RB Flgd.	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		150#	50	0	2	2	0	2	0	0
7	79 RQ/30	008	NON MESC 31440X Ball Valve 14313 RB	F Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	50	0	25	28	0	34	0	6

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80 RQ/3	8008	NON MESC	31440X Ball Valve 14313 FB F	FI Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	150	0	9	10	0	12	0	2
81 RQ/3	8008	NON MESC	11440X Ball Valve 14313 FB F	FI Body: ASTM A105/A216 WCB/WCC WITH ALLOY 625 CLAD Trim: SDSS,	, PTFE	150#	250	0	1	1	0	1	0	0
82 RQ/3	011	NON MESC	31440x Globe Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	50	0	0	0	0	1	0	1
83		7707031531	18011 Ball Valve Float RB Th	n ASTM B148-UNS C95400,TRIM:ALUMINIUM BRONZE,PTFE		800#	15	0	1	1	0	1	0	0
84 RQ/3	1009	NON MESC	31440x Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	50	0	5	6	0	6	0	0
85 RQ/3	009	NON MESC	31440x Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	150	0	3	3	0	4	0	1
86	1090000348	7710050081	11440 Check Valve Flgd	Body: ASTM A105/A216-WCB/WCC Trim: AISI 316, Stellite 6		150#	50	0	1	1	0	1	0	0
87		7713193541	33411 Check Valve Flgd	Body: ASTM A182-F316/A351-CF8M Trim: AISI 316, Stellite 6		300#	20	0	1	1	0	2	0	1
88 RQ/3	005	NON MESC	31440x Modular Constr. SBBV	/ Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	50	50	11	11	0	10	1	0
89		7723033531	33411 Gate Valve Flgd	Body: ASTM A182-F316/A351-CF8M Trim: AISI 316, Stellite 6		300#	15	0	1	1	0	2	0	1
90		7723033541	33411 Gate Valve Flgd	Body: ASTM A182-F316/A351-CF8M Trim: AISI 316, Stellite 6		300#	20	0	1	1	0	2	0	1
91		7730053531	31440x Globe Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	15	0	11	12	0	8	4	0
92	1000063033	8138611551	33411 Stud Bolt with Nuts	ASTM A193-B7/A194-2H			0.5	70	8	10	0	24	0	14
93	1000063047	8138612691	33411 Stud Bolt with Nuts	ASTM A193-B7/A194-2H			0.63	80	16	20	0	60	0	40
94	1000063457	8138661551	31440 Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.5	70	160	208	0	84	124	0
95	1000063471	8138662711	11440 Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.63	90	40	52	. 0	96	0	44
96	1000063473	8138662731	11440 Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.63	100	656	852	. 0	1332	0	480
97	1000063474	8138662741	31440) Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.63	110	152	197	0	96	101	0
98 -	1000063477	8138662781	31440X Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.63	130	64	83	0	36	47	0
99 1	1000063494	8138663351	31440X Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.75	140	0	0	0	96	0	96
100 1	1000063496	8138663371	31440X Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.75	150	1032	1341	0	252	1089	0
101		8138663401	31440X Stud Bolt with Nuts	ASTM A193-B7M/A194-2HM			0.75	170	108	140	0	18	122	0
102 1	1000064370	8541363141	13411 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	50	0	14	28	0	40	0	12
103 1	1000064371	8541363181	11440 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	80	0	4	8	0	8	0	0
104 1	1000064372	8541363201	11440 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	100	0	8	16	0	14	2	0
105 1	1000064375	8541363281	11440 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	250	0	2	4	0	4	0	0
106 1	1000064390	8541363701	31440X Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	100	0	0	C	0	2	0	2
107 1	1000064391	8541363741	31440x Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	150	0	6	12	2 0	20	0	8
108 1	1000064408	8541364041	31440X Gasket Spiral Wound	AISI 316, graphite filled CS_centring-/SS inner ring		.30.0#	15	0	44	88	3 0	36	52	0
109 1	1000064409	8541364061	33411 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	20	0	4	8	3 0	20	0	12
110 1	1000064410	8541364081	33421 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	25	0	0	C	0	4	0	4
111 1	1000064412	8541364141	33421 Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	50	0	38	76	6 0	72	4	0
112 1	1000206450	8546030661	11440 Insulating Gasket	GRE G10 - Mylar	S80	150#	50	0	2	2	2 0	2	0	0
113 1	1000206482	8546030821	11440 Insulating Gasket	GRE G10 - Mylar	S80	150#	80	0	2	2	2 0	0	2	0
114 RQ/30	002	NON MESC	31440X Basket Strainer	Body: ASTM A105/A216-WCB/WCC Internal glass flake coating Trim: 25%	Cr Duplex	300#	150	0	2	2	2 0	2	0	0
115 RQ/30	007	NON MESC	31440X Chemical Injection Qui	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	50	0	2	2	2 0	2	0	0
116 RQ/30	D13	NON MESC	13411 Elaflex Coupling	STAINLESS STEEL		150#	50	0	0	C	0	1	0	1

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Civil Drawings

PAIP00405- Nimr Sludge Pit Up gradation.

PAIPOOH05

NIMR- SLUDGE PITS SYSTEMS UPGRADE

### PROJECT - PAIP00405

# **CIVIL DRAWINGS - HOLD LIST:-**

S. No.	ITEM	Piping GA Ref. Dwg. No.	REASON
	in Launcher Area		
1	2 Platforms coming on Existing Sludge pit.	NIM-3-2140-001-DQ & NIM-3-2142-001-DQ.	Pending pump support finalisation.
2	Monorail & its foundation.	NIM-3-2140-001-DQ & NIM-3-2142-001-DQ.	Pending Pump capacity.
3	Valve pit.	NIM-3-2141-001-DQ.	Size & location pending.
4	A48309 - Oxygen Scavenger Skid Foundation.	NIM-3-2141-001-DQ.	Pending vendor data finalisation.
5	Sunshade & IPS/UDB Foundation.	NIM-1-3710-001-DQ.	Pending vendor data finalisation.
6	PS 26 & 27 - Civil Dwg no. NIM-2-1842-032-DQ. PS 28 - Dwg no. NIM-2-1842-044-DQ. PS 33 - Dwg no. NIM-2-1842-052-DQ. PS 34 & 35 - Dwg no. NIM-2-1842-053-DQ.	NIM-3-2140-001-DQ & NIM-3-2142-001-DQ.	Elevation pending from vendor.



Index Doc. No.:

Job No.: PAIP00405

Job Title: Nimr Sludge Pits System upgrade - FED & DD

Phase: DD

Dis	cipline Code: Civil			C	Current Revision Detail			Earlier Revision Detail		
Item#		Size	Description:	Rev#	Rev# Date: Status:		Rev#	Date:	Status:	
1	NIM-1-2635-200-DQ	A4	Drawing Control Index	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
2	NIM-2-0992-001-DQ	A1	FOUNDATION LOCATION PLAN	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
3	NIM-2-1841-001-DQ	A3	GENERAL NOTES - CONCRETE	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
4	NIM-2-1841-002-DQ	A3	GENERAL NOTES - STEEL	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
5	NIM-2-1841-003-DQ	A3	TYPICAL STAIR AND HANDRAILING	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
6	NIM-2-1841-004-DQ	A3	TYPICAL GRATING AND TREAD DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
7	NIM-2-1841-005-DQ	A3	STANDARD BAR SHAPE CODES	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
8	NIM-2-1842-001-DQ	A3	PIPE SUPPORTS (LAUNCHER) INDEX SHEET	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
9	NIM-2-1842-002-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
10	NIM-2-1842-003-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
11	NIM-2-1842-004-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
12	NIM-2-1842-005-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
13	NIM-2-1842-006-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
14	NIM-2-1842-007-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
15	NIM-2-1842-008-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
16	NIM-2-1842-009-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
17	NIM-2-1842-010-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
18	NIM-2-1842-011-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
19	NIM-2-1842-012-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
20	NIM-2-1842-013-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
21	NIM-2-1842-014-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
22	NIM-2-1842-015-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
23	NIM-2-1842-016-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
24	NIM-2-1842-017-DQ	A3	PIPE SUPPORTS -'U' BOLT	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
25	NIM-2-1842-018-DQ	A3	PIPE SUPPORTS - PIPE GUIDE DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
26	NIM-2-1842-020-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
27	NIM-2-1842-021-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
28	NIM-2-1842-022-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
29	NIM-2-1842-023-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	



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30	NIM-2-1842-024-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
31	NIM-2-1842-025-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
32	NIM-2-1842-026-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
33	NIM-2-1842-027-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
34	NIM-2-1842-028-DQ	A3	PIPE SUPPORTS (LAUNCHER) INDEX SHEET	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
35	NIM-2-1842-029-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
36	NIM-2-1842-030-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
37	NIM-2-1842-031-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
38	NIM-2-1842-032-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
39	NIM-2-1842-033-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
40	NIM-2-1842-034-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
41	NIM-2-1842-035-DQ	A3	PIPE SUPPORTS - FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
42	NIM-2-1842-036-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
43	NIM-2-1842-037-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
44	NIM-2-1842-038-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
45	NIM-2-1842-039-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
46	NIM-2-1842-040-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
47	NIM-2-1842-041-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
48	NIM-2-1842-042-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
49	NIM-2-1842-043-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
50	NIM-2-1842-044-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
51	NIM-2-1842-045-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
52	NIM-2-1842-046-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
53	NIM-2-1842-047-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
54	NIM-2-1842-048-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
55	NIM-2-1842-049-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
56	NIM-2-1842-050-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
57	NIM-2-1842-051-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
58	NIM-2-1842-052-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
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59	NIM-2-1842-053-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
60	NIM-2-1842-054-DQ	A3	PIPE SUPPORTS	Α	27-FEB-11	AFC	0	26-FEB-11	IFC	
61	NIM-2-1842-055-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
62	NIM-2-1842-056-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
63	NIM-2-1842-057-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
64	NIM-2-1842-058-DQ	A3	PIPE SUPPORTS	A	27+FEB-11	AFC	0	26-FEB-11	IFC	
65	NIM-2-1842-059-DQ	A3	PIPE SUPPORTS	Α	27-FEB-11	AFC	0	26-FEB-11	IFC	
66	NIM-2-1842-060-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
67	NIM-2-1842-061-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
68	NIM-2-1842-062-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
69	NIM-2-1842-063-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
70	NIM-2-1842-064-DQ	A3	PIPE SUPPORTS - 'U' BOLT DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
71	NIM-2-1842-065-DQ	A3	PIPE SUPPORTS PIPE CLAMP WITH SHOW AND LINE STO	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
			DETAILS	_						
72	NIM-2-1842-066-DQ	A3	PIPE SUPPORTS PIPE GUIDE DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
73	NIM-2-1842-067-DQ	A3	PIPE SUPPORTS LINE STOP DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
74	NIM-2-1842-068-DQ	A3	PIPE SUPPORTS PIPE SHOE DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
75	NIM-2-1842-069-DQ	A3	PIPE SUPPORTS PIPE SHOE GUIDE DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
76	NIM-2-1842-070-DQ	A3	PIPE SUPPORTS PIPE CLIP (HEAVY) DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
77	NIM-2-1843-001-DQ	A3	CIVIL DETAILS SPILL PIT & HARD STRAND	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
78	NIM-2-1844-001-DQ	A1	STRUCTURAL STEEL DETAILS PLATFORM MK'D P1	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
79	NIM-2-1844-002-DQ	A3	CIVIL DETAILS PLATFORM FOUNDATION MK'D PF1	Α	27-FEB-11	AFC	0	26-FEB-11	IFC	
80	NIM-2-1844-003-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
81	NIM-2-1844-004-DQ	A3	CIVIL DETAILS STAIR FOUNDATION MK'D SF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
82	NIM-2-1844-005-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
83	NIM-2-1844-006-DQ	A3	STRUCTURAL STEEL DETAILS CROSS OVER-CO1	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
84	NIM-2-1844-007-DQ	Al	STRUCTURAL STEEL DETAILS CROSS OVER MK'D-CO2	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
85	NIM-2-1844-008-DQ	A3	CIVIL DETAILS CROSS OVER FOUNDATION MK'D CF2	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
86	NIM-2-1844-009-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	



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Item#	Document No	Size	Description:	Rev#	Date:	Status:	Rev#	Date:	Status:
87	NIM-2-1844-010-DQ	A1	STRUCTURAL STEEL DETAILS PLATFORM MK'D P1&P2	A	27-FEB-11	AFC	0	26-FEB-11	IFC
88	NIM-2-1844-011-DQ	A3	CIVIL DETAILS FOUNDATION DETAILS MK'D PF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
89	NIM-2-1844-012-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
90	NIM-2-1844-013-DQ	A3	CIVIL DETAILS STAIR FOUNDATION MK'D SF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
91	NIM-2-1844-014-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
92	NIM-2-1845-001-DQ	A1	CONCRETE STRUCTURE G.A. & REINFT. DET'S. FOR ROACULVERT No.5	A	27-FEB-11	AFC	0	26-FEB-11	IFC
93	NIM-2-1845-002-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
94	NIM-2-1845-003-DQ	$\frac{A^{4}}{A1}$	CONCRETE STRUCTURE G.A. & REINFT. DET'S. FOR ROA	A	27-FEB-11	AFC	0	26-FEB-11	IFC
) <del>-</del>	141141-2-1643-003-DQ		CULVERT No.2A	A	27-FED-11	Arc		20-FEB-11	IFC
95	NIM-2-1845-004-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
96	NIM-2-1845-005-DQ	A1	LAYOUT G.A. OF CULVERT No.1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
97	NIM-2-1845-006-DQ	A1	CONCRETE STRUCTURE G.A. & REINFT. DET'S. FOR ROA	Α	27-FEB-11	AFC	0	26-FEB-11	IFC
			CULVERT No.1						
98	NIM-2-1845-007-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
99	NIM-2-1845-008-DQ	A1	LAYOUT G.A. OF CULVERT No.2	Α	27-FEB-11	AFC	0	26-FEB-11	IFC
100	NIM-2-1845-009-DQ	A1	CONCRETE STRUCTURE G.A. & REINFT. DET'S. FOR RO	A	27-FEB-11	AFC	0	26-FEB-11	IFC
101	\		CULVERT No.2						
101	NIM-2-1845-010-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
102	NIM-2-1845-011-DQ	A1	LAYOUT G.A. OF CULVERT No.3 & 4	A	27-FEB-11	AFC	0	26-FEB-11	IFC
103	NIM-2-1845-012-DQ	A1	CONCRETE STRUCTURE G.A. & REINFT. DET'S. FOR ROA	A	27-FEB-11	AFC	0	26-FEB-11	IFC
104	NIM-2-1845-013-DQ	A4	CULVERT No.3 & 4. BBS	A	27-FEB-11	AFC		24 FED 11	TTC
104	NIM-2-1846-001-DQ	A3	CIVIL DETAILS BENCH MARK DETAILS MK'D BM 1		27-FEB-11 27-FEB-11	AFC	0	26-FEB-11	IFC
106	NIM-2-1846-002-DQ	Al	CIVIL DETAILS WINDSOCK DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
107	NIM-2-5166-001-DQ	Al	FOUNDATION LAYOUT				0	26-FEB-11	IFC
107	NIM-2-5167-001-DQ	A1	FOUNDATION LAYOUT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
	`			A	27-FEB-11	AFC	0	26-FEB-11	IFC
109	NIM-2-5210-001-DQ	Al	FOUNDATION LAYOUT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
110	NIM-2-5604-001-DQ	A1	FOUNDATION LAYOUT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
111	NIM-2-5604-005-DQ	A1	FOUNDATION LAYOUT	Α	27-FEB-11	AFC	0	26-FEB-11	IFC

Phase: DD



Client: Petroleum Development Oman LLC (PDO)

Index Doc. No.:

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General Charles Dita Caratana managada EED & DD

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Item#	Document No	Size	Description:	Rev#	Rev# Date: Status:		Rev#	Date:	Status:	
112	NIM-2-5771-001-DQ	A3	GENERAL NOTES - CONCRETE	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
113	NIM-2-5771-002-DQ	A3	GENERAL NOTES - STEEL	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
114	NIM-2-5771-003-DQ	A3	TYPICAL STAIR AND HANDRAILING	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
115	NIM-2-5771-004-DQ	A3	TYPICAL GRATING AND TREAD DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
116	NIM-2-5771-005-DQ	A3	STANDARD BAR SHAPE CODES	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
117	NIM-2-5771-006-DQ	A3	TYPICAL LADDER DETAILS (FRONT ENTRY)	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
118	NIM-2-5772-001-DQ	A3	PIPE SUPPORTS (RECEIVER) INDEX SHEET	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
119	NIM-2-5772-002-DQ	A3	PIPE SUPPORTS (RECEIVER) INDEX SHEET	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
120	NIM-2-5772-003-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
121	NIM-2-5772-004-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
122	NIM-2-5772-005-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
123	NIM-2-5772-006-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
124	NIM-2-5772-007-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
125	NIM-2-5772-008-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
126	NIM-2-5772-009-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
127	NIM-2-5772-010-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
128	NIM-2-5772-011-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
129	NIM-2-5772-012-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
130	NIM-2-5772-013-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
131	NIM-2-5772-014-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
132	NIM-2-5772-015-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
133	NIM-2-5772-016-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
134	NIM-2-5772-017-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
135	NIM-2-5772-018-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
136	NIM-2-5772-019-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
137	NIM-2-5772-020-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
138	NIM-2-5772-021-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
139	NIM-2-5772-022-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
140	NIM-2-5772-023-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	



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Item#	Document No	Size	Description:	Rev#	Rev# Date: Status:		Rev#	Date:	Status:	
141	NIM-2-5772-024-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
142	NIM-2-5772-025-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
143	NIM-2-5772-026-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
144	NIM-2-5772-027-DQ	A4	BBS	A	27-FEB-11	AFDD	0	26-FEB-11	IFC	
145	NIM-2-5772-028-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
146	NIM-2-5772-029-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
147	NIM-2-5772-030-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
148	NIM-2-5772-031-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
149	NIM-2-5772-032-DQ	A3	PIPE SUPPORTS (RECEIVER) INDEX SHEET	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
150	NIM-2-5772-033-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
151	NIM-2-5772-034-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
152	NIM-2-5772-035-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
153	NIM-2-5772-036-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
154	NIM-2-5772-037-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
155	NIM-2-5772-038-DQ	A4	BBS	A	27 <sub>T</sub> FEB-11	AFC	0	26-FEB-11	IFC	
156	NIM-2-5772-039-DQ	A3	PIPE SUPPORTS	A	27+FEB-11	AFC	0	26-FEB-11	IFC	
157	NIM-2-5772-040-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
158	NIM-2-5772-041-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
159	NIM-2-5772-042-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
160	NIM-2-5772-043-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
161	NIM-2-5772-044-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
162	NIM-2-5772-045-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
163	NIM-2-5772-046-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
164	NIM-2-5772-047-DQ	A3	PIPE SUPPORTS-TRUNNION	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
165	NIM-2-5772-048-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
166	NIM-2-5772-049-DQ	A3	PIPE SUPPORTS-FOUNDATION DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
167	NIM-2-5772-050-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
168	NIM-2-5772-051-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	
169	NIM-2-5772-052-DQ	A3	PIPE SUPPORTS	A	27-FEB-11	AFC	0	26-FEB-11	IFC	

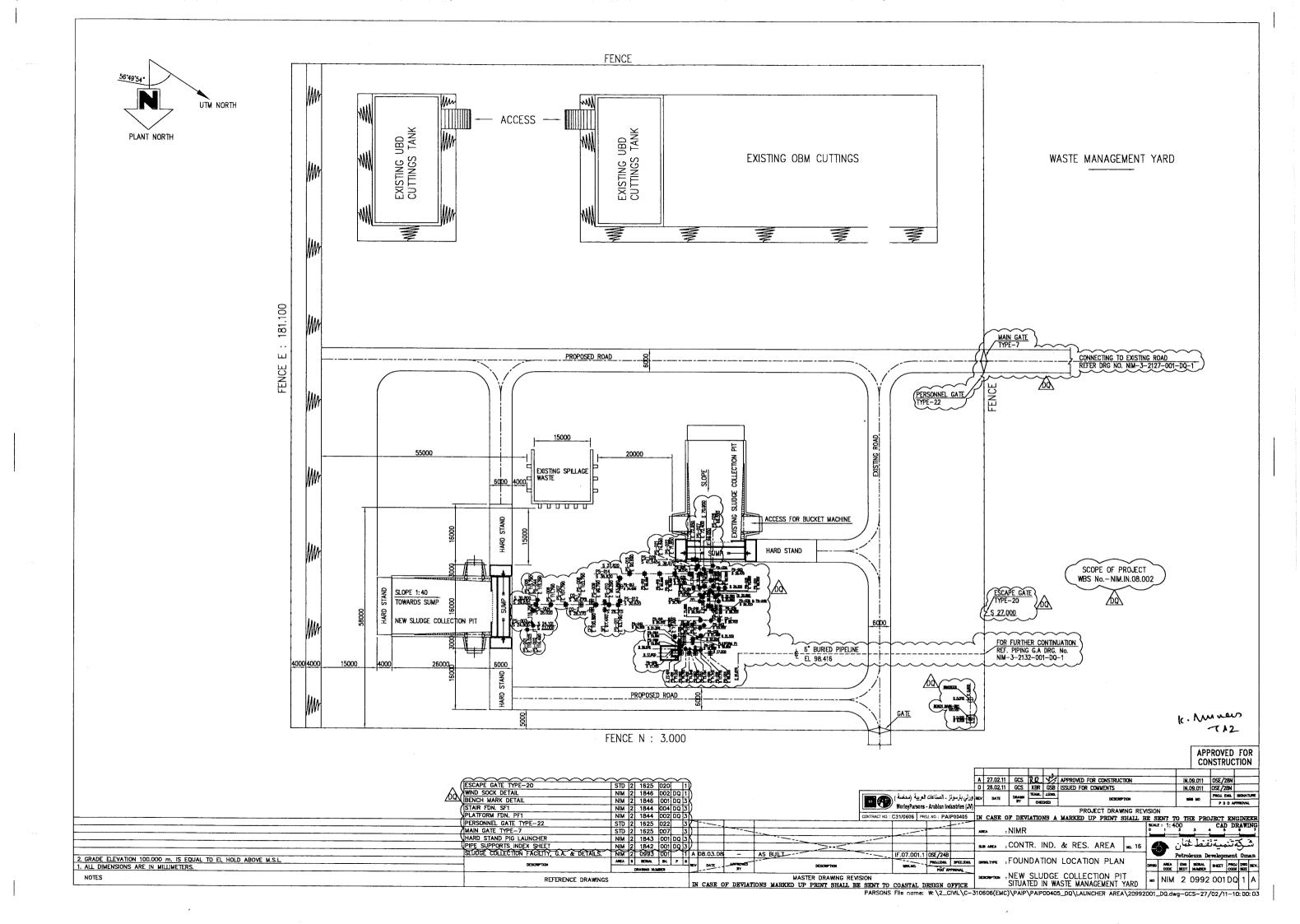


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Item#	Document No	Size	Description:	Rev#	Date:	Status:	Rev#	Date:	Status:
170	NIM-2-5772-053-DQ	A3	PIPE SUPPORTS-SLEEPER DETAILS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
171	NIM-2-5772-054-DQ	A3	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
172	NIM-2-5772-055-DQ	A3	PIPE SUPPORTS 'U' BOLT(PIPE NOT GRIPPED)	A	27-FEB-11	AFC	0	26-FEB-11	IFC
173	NIM-2-5773-001-DQ	A3	CIVIL DETAILS SPILL PIT & HARD STRAND	A	27-FEB-11	AFC	0	26-FEB-11	IFC
174	NIM-2-5774-001-DQ	A1	CIVIL DETAILS DRAIN PIT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
175	NIM-2-5774-002-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
176	NIM-2-5774-003-DQ	A1	CIVIL DETAILS FLANGE PIT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
177	NIM-2-5774-004-DQ	A3	CIVIL DETAILS HARD STAND	A	27-FEB-11	AFC	0	26-FEB-11	IFC
178	NIM-2-5774-005-DQ	A1	CIVIL DETAILS FLANGE PIT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
179	NIM-2-5774-006-DQ	A3	CIVIL DETAILS COLLECTION PIT	A	27-FEB-11	AFC	0	26-FEB-11	IFC
180	NIM-2-5775-001-DQ	A1	STRUCTURAL STEEL DETAILS PLATFORM MK'D P1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
181	NIM-2-5775-002-DQ	A3	CIVIL DETAILS PLATFORM FOUNDATION MK'D PF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
182	NIM-2-5775-003-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
183	NIM-2-5775-004-DQ	A3	CIVIL DETAILS STAIR FOUNDATION MK'D SF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
184	NIM-2-5775-005-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
185	NIM-2-5775-006-DQ	A1	STRUCTURAL STEEL DETAILS PLATFORM MK'D P1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
186	NIM-2-5775-007-DQ	A3	CIVIL DETAILS FOUNDATION DETAILS MK'D PF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
187	NIM-2-5775-008-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC
188	NIM-2-5775-009-DQ	A1	STRUCTURAL STEEL DETAILS PLATFORM MK'D P2	A	27-FEB-11	AFC	0	26-FEB-11	IFC
189	NIM-2-5775-010-DQ	A3	CIVIL DETAILS STAIR FOUNDATION MK'D SF1	A	27-FEB-11	AFC	0	26-FEB-11	IFC
190	NIM-2-5775-011-DQ	A4	BBS	A	27-FEB-11	AFC	0	26-FEB-11	IFC



#### 1.0 GENERAL NOTES

- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH CONSTRUCTION CONTRACT AND / OR CIVIL AND BUILDING CONSTRUCTION SPECIFICATIONS SP-1279 AND GUIDE TO CONCRETE CONSTRUCTION SP-1282.
- 1.2 ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT FOR PIPE SIZES WHICH ARE SHOWN IN INCHES.
- 1.3 ALL ELEVATIONS ARE IN METERS AND RELATED TO DATUM ELEVATION OF 100.000

## 2.0 EXCAVATION, TRENCHING AND BACKFILL

2.1 BACKFILL FOR FOUNDATIONS, WALLS, TRENCHES AND SITE GRADING SHALL BE PLACED IN EVEN LAYERS (SUCH THAT COMPACTED THICKNESS DOES NOT EXCEED 150mm) AND THE FULL WIDTH OF THE FORMATION. THE FILL SHALL BE GRADED AS SHOWN BELOW.

BS SEIVE SIZE	% PASSING BY WEIGHT
50.00 mm	100%
9.50 mm	60%-100%
5.00 mm	50%-85%
2.00 mm	40%-70%
425 µm	25%-45%
75 чm	8%-15%

ALL FILL MATERIAL INCLUDING SUBGRADE AND VERGES SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINED IN THE MODIFIED AASHTO COMPACTION TEST.

- 2.2 ALL UNDERGROUND CABLES EXCEPT EARTHING CABLES SHALL BE LAID AT A MINIMUM DEPTH OF 600mm.
- 2.3 INSTRUMENTATION CABLES SHALL NOT BE LAID IN THE SAME TRENCH WITH POWER AND LIGHTING CARLES
- 2.4 ALL BURIED CABLES SHALL BE LAID IN SUCH A WAY THAT THE FILLING MATERIAL WITHIN 100mm FROM THE CABLES SHALL BE FREE OF STONES OR OTHER MATERIALS WHICH MAY DAMAGE THE CABLES. SUITABLE FILL, SUCH AS CLEAN SMALL-GRAINED SAND SHALL BE USED FOR THIS PURPOSE. THE CABLES SHALL BE PROTECTED BY SUITABLE SLABS OR TILES WHICH SHALL FORM A CONTINUOUS BUT REMOVABLE COVERING 200mm ABOVE THE HIGHEST CABLE.
- WHERE CROSSING OF INSTRUMENTATION WITH POWER AND LIGHTING CABLES IS UNAVOIDABLE, INSTRUMENTATION CABLE SHALL BE LAID ABOVE AND SHALL BE KEPT AT A MINIMUM DISTANCE OF 750mm FROM POWER AND LIGHTING CABLES.

#### 3.0 FOUNDATION WORKS

- 3.1 THE FOUNDATIONS FOR BUILDINGS, EQUIPMENT, STEEL STRUCTURES AND PIPE SUPPORTS WHEREVER SPECIFIED ON DRAWINGS SHALL BE LAID ON 2 COATS OF FOSROC'S 'NITOCOTE PE 135' GLASS MAT SPREAD OVER BLINDING CONCRETE. THE SIDES AND TOP OF CONCRETE FOUNDATION IN CONTACT WITH SOIL AND UPTO 250mm ABOVE GRADE SHALL BE APPLIED WITH FOSROC'S 'NITOCOTE PE 135' IN 2 COATS WITH EACH COAT MEASURING 600 MICRON THICKNESS. WHILE THE FIRST COAT IS STILL WET, APPLY 120-150 gsm GLASS MAT ON THE SURFACE AND ROLL OVER TO ENSURE THE MAT IS FULLY EMBEDDED. MASTER SEAL 550 MANUFACTURED BY DEGUSSA OR ANY OTHER PDO APPROVED EQUIVALENT IN PLACE OF 'NITOCOTE PE 135'. APPLICATION SHALL BE AS PER RESPECTIVE MANUFACTURER'S INSTRUCTIONS
- 3.2 BEFORE POURING CONCRETE, THE FIELD SHALL MAKE PROVISION FOR THE INSTALLATION OF ALL UNDERGROUND SERVICES AFFECTED BY THE FOUNDATIONS.
- 3.3 BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10.
- ALL EXPOSED PORTIONS OF FOUNDATION CONCRETE AND INSIDE SURFACES OF RCC PITS, WHEREVER NOT SPECIFICALLY SPECIFIED, SHALL BE COATED WITH 'FOSROC DEKGUARD S' OR EQUIVALENT.

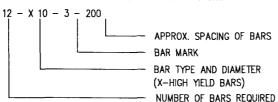
#### 4.0 CONCRETE

- 4.1 ALL CONCRETE WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH CODE OF PRACTICE FOR THE STRUCTURAL USE OF CONCRETE: BS 8110 INCLUDING ALL RELATED CODES FOR PLACING, MIXING, CURING AND TESTING.
- 4.2 A LAYER OF BLINDING CONCRETE 50mm THK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/mm<sup>2</sup> AT 28 DAYS.
- 4.3 ALL CONCRETE WITH THE EXCEPTION OF BLINDING CONCRETE SHALL OF GRADE AS SPECIFIED IN THE RESPECTIVE DETAILED DRAWINGS AND SHALL NOT BE LOWER THAN GRADE 35 CONCRETE WITH 'CORTEC MCI 2005' CORROSION INHIBITOR AT A RATE OF 0.6 lit/m3 OR EQUIVALENT. MIXING SHALL BE AS PER MANUFACTURER INSTRUCTIONS.
- 4.4 FOR ALL CONCRETE WORKS, ORDINARY PORTLAND CEMENT TO BS EN 197 SHALL BE USED, UNLESS OTHERWISE SPECIFIED. MAXIMUM FREE WATER CEMENT RATIO SHALL BE 0.45 MINIMUM CEMENT CONTENT FOR 20mm AGGREGATE SHALL BE 370 kg/m3. FOR 40mm AGGREGATE SHALL BE 340 kg/m3.

- 4.5 ALL EDGES OF EXPOSED AND BURIED CONCRETE MEMBERS SHALL HAVE CHAMFER OF APPROXIMATELY 25mm
- HOT-ROLLED DEFORMED HIGH-YIELD BARS GRADE 460 WITH A SPECIFIED CHARACTERISTIC STRENGTH OF 460 N/mm2 SHALL BE USED AS REINFORCEMENT FOR ALL CONCRETE WORKS. HOT-ROLLED MILD STEEL BARS GRADE 250 WITH A SPECIFIED CHARACTERISTIC STRENGTH OF 250 N/mm2 SHALL BE USED WHERE SPECIFIED.
- NOMINAL COVER TO ALL REINFORCEMENT (INCLUDING LINKS) UNLESS SPECIFIED OTHERWISE SHALL BE
  - 1) FOUNDATIONS, COLUMNS, BEAMS, SLABS AND WALLS IN CONTACT 50 mm WITH SOIL OR EXPOSED TO WEATHER.
  - 2) COLUMNS, BEAMS AND WALLS NEITHER IN CONTACT WITH SOIL NOR EXPOSED TO WEATHER.
  - 3) BUILDING FLOOR SLABS & ROOF SLABS
- UNLESS NOTED OTHERWISE ON THE DRAWING FOLLOWING MINIMUM LAP LENGTHS SHALL BE USED.

	SIZE	LAP LENGTH*
	TB	450
	T10	550
	T12	650
	T16	850
-	T20	1050
	T25	1300
	T32	1650

- \* SPECIFIED TO THE NEAREST 25 mm.
- LEGEND FOR REINFORCEMENT OF HOT-ROLLED MILD STEEL AND HOT ROLLED DEFORMED HIGH YIELD STRESS BARS.



#### 5.0 ANCHOR BOLTS

- ALL ANCHOR BOLTS AND NUTS SHALL CONFORM TO A 307-B OR DIN 267 4.6 OR BS 970 070 M20 UNLESS SPECIFIED OTHERWISE. ALL WASHERS SHALL BE ACCORDING TO BS 4320. ALL THREADING SHALL BE ISO METRIC THREAD CONFORMING TO BS 3643.
- ALL PROJECTIONS OF HOLDING DOWN BOLTS (ANCHOR BOLTS) ARE TAKEN FROM TOP OF ROUGH CONCRETE.
- STYROPOR OR SIMILAR APPROVED MATERIAL FOR FORMING THE (ANCHOR) BOLT POCKETS SHALL BE SECURED AGAINST ANY MOVEMENT DURING CONSTRUCTION AND REMOVED AS SOON AS THE CONCRETE IS SET.

#### 6.0 GROUTING

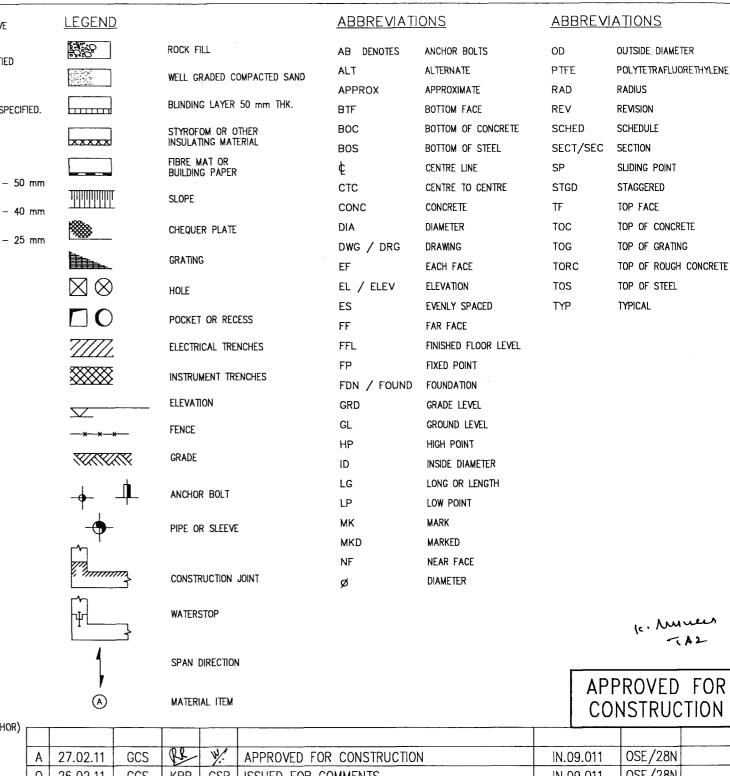
- ALL GROUTING REQUIRES PRIOR APPROVAL BY ENGINEER BEFORE GROUTING. THE SURFACE SHALL BE CLEANED AND SOAKED WITH WATER.
- GROUT MORTAR SHALL CONSIST OF ONE PART OF ORDINARY PORTLAND CEMENT AND TWO PARTS OF SAND WITH WATER CEMENT RATIO NOT EXCEEDING 0.4.
- 6.3 GROUT MORTAR SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 40 N/mm2
- WHERE REQUIRED AND INDICATED ON THE DRAWINGS. A NON-SHRINK GROUT SHALL BE PREPARED AND APPLIED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

CONTRACT NO.: C31/0606

رلى بارسونز - الصناعات العربية (محاصة

WorleyParsons - Arabian Industries (JV)

PROJ. NO.: PAIP00405



Α	27.02.11	GCS	Br	W.	APPROVED FOR CONSTRUCTION	IN.09.011	OSE/28N	
0	26.02.11	GCS	KBR	GSB	ISSUED FOR COMMENTS	IN.09.011	OSE/28N	
REV	DATE	DRAWN	TEAML	J.ENG.	DECODIDEDA	WDC N	PROJ. ENG.	SIGNATURE
KEV	DATE BY CHECKED		CKED	DESCRIPTION	WBS No.	PDOA	PPROVAL	

PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

: NIMR AREA NIMR SLUDGE PIT SYSTEMS NO. 16 SUB AREA

AREA DRWG

Petroleum Development Oman PROJ DWG REV. ENG SHEET CODE SECT CODE SIZE

CAD DRAWING

GENERAL NOTES, LEGEND DESCRIPTION AND ABBREVIATIONS

DRWG.TYPE

.CONCRETE STRUCTURE

NIM 2 1841 001 DQI 3 A

## 1.0 GENERAL NOTES.

- 1.1 ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH CONSTRUCTION CONTRACT AND / OR CONSTRUCTION SPECIFICATION SP-1279.
- 1.2 ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT FOR PIPE SIZES WHICH ARE SHOWN IN INCHES.
- 1.3 ALL ELEVATIONS ARE IN METERS AND RELATED TO DATUM ELEVATION OF 100,000

# 2.0 STRUCTURAL STEEL MATERIAL

- 2.1 STEEL STRUCTURE SHALL BE FABRICATED IN ACCORDANCE WITH GOOD WORKING PRACTICE, MATERIALS, WORKMANSHIP AND TESTING GENERALLY SHALL COMPLY WITH BS 5950 PART-1,2000.
- 2.2 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING MATERIAL REQUIRMENT. GRADE S275 JR COMPLYING WITH BS EN 10025 PART 1 & 3.
- 2.3 STRUCTURAL STEEL SHALL COMPLY WITH THE REQUIRMENT OF BS 5950, PART-1, IN ADDITION STRUCTURAL STEEL HOT ROLLED SECTIONS SHALL COMPLY WITH THE REQUIRMENTS OF BS 4 PART-1,1993 AND PART-2,1969 AND FOR ANGLES BS EN 10056-1:1999 (METRIC DIMENSIONS). PIPES USED FOR STRUCTURAL PURPOSE SHALL COMPLY WITH ASTM A 106 GRADE B, OR AS SPECIFIED ON THE DRAWINGS.

# 3.0 BOLTING

- 3.1 BOLTS AND NUTS SHALL HAVE ISO METRIC COARSE THREAD.
- 3.2 MILD STEEL BOLTS, NUTS AND WASHERS SHALL COMPLY WITH THE REQUIREMENT OF BS 5950 PART-1,BS 4190 AND BS 4320.
- 3.3 WASHERS ARE TO BE PROVIDED UNDER ALL NUTS ON BEVELLED SURFACES SQUARE TAPER WASHERS OF 5 mm MEAN THICKNESS SHALL BE PROVIDED UNDER NUT OR HEAD AS APPROPRIATE.

## 4.0 WELDING

- 4.1 WELDING USED IN THE FABRICATION WORK IS TO BE BY THE METALLIC ARC PROCESS USING ELECTRODES COMPLYING WITH THE REQUIREMENTS OF BS 639.THE WHOLE OF THE WORK IS TO BE IN ACCORDANCE WITH THE REQUIRMENTS LAID DOWN IN BS 5950 AND 5135.
- 4.2 THE ENDS OF ALL STANCHIONS AND POSTS TOGETHER WITH GUSSETS WHERE PRESENT AND ALREADY WELDED ON, SHALL BE MACHINED SO THAT THE WHOLE AREA IS IN DIRECT CONTACT WITH THE BASE, BEARING OR CAP PLATE, SUCH PLATES BEING TRULY AT RIGHT ANGLES TO THE STANCHION AXIS OR AS OTHERWISE SPECIFIED ON THE DRAWING.
- 4.3 MINIMUM SIZE OF WELD SHALL BE 6 mm UNLESS SPECIFIED.

#### 5.0 FLOORING AND GRATING

- 5.1 STAIR TREADS SHALL BE OF HOT DIP GALVANIZED GRATING.
- 5.2 SOLID FLOORING SHALL BE MADE OF TEAR PLATE (DURBAR OR EQUIVALENT).
- 5.3 CHEQUERED PLATE SHALL NOT BE USED FOR PLATFORMS
  IN OIL AND GAS PROCESSING PLANTS. HOWEVER CHEQUERED PLATE
  FLOORING IS PERMITTED TO BE USED AS TRENCH COVERING
  WITHIN CONTROL BUILDINGS AND ELECTRICAL SUBSTATIONS.
- 5.4 FOR OPEN FLOORING GALVANISED GRATING SHALL BE USED.

  THE MAIN BARS OF THE GRATING SHALL BE 25x5mm MINIMUM
  AT A CENTRE LINE SPACING OF 33 mm. LATERAL RESTRAINT
  SHALL BE PROVIDED BY 6 mm SQUARE TRANSVERSE BARS AT
  A SPACING OF 33 mm, WELDED INTO THE UPPER EDGE OF
  THE MAIN BARS. FIXING MATERIAL SHALL BE
  HOT DIP GALVANIZED TO BS EN ISO 1461:1999

#### 6.0 ERECTION

- 6.1 ERECTION ON CONCRETE FOUNDATION SHALL NOT COMMENCE WITHIN 7 DAYS OF POURING THE CONCRETE FOUNDATIONS AND ONLY IF THE CONCRETE HAS ACQUIRED SUFFICIENT STRENGTH.
- 6.2 THE CONTRACTOR SHALL PROPERLY ALIGN EACH PART OF THE STRUCTURE BEFORE MAKING THE FIELD CONNECTIONS
- 6.3 THE CONTRACTOR SHALL ENTIRELY BE RESPONSIBLE FOR THE STABILITY OF THE STEELWORK DURING ERECTION AND HE SHALL ARRANGE FOR ALL TEMPORARY GUYING, BRACING AND SUPPORTS TOGETHER WITH ANY ADDITIONAL TACK BOLTS NECESSARY FOR THE STABILITY OF THE STEELWORK UNTIL FINAL BOLTING UP.
- 6.4 THE STEELWORK SHALL BE ACCURATELY ERECTED WITHIN THE FOLLOWING TOLERANCE.

SETTING OUT-PLAN ±10mm OVERALL BUILDING DIMENSIONS BUT NOT MORE THAN +5mm IN ANY ONE 5 METER BAY LEVELS-FOR STANCHIONS AND COLUMN BASE PLATES. PLUMB OF STANCHIONS, 0.1 % OF HEIGHT, BUT NOT POSTS, FTC MORE THAN ±5 mm OVERALL. STRAIGHTNESS OR BOW NOT MORE THAN THE ROLLING OR OUT OF SQUARENESS TOLERANCES AS GIVEN IN OF SECTIONS AFTER BS 5950 PART 2: 2001

# 7.0 HOT-DIP GALVANIZING

FRECTION

- 7.1 THE SURFACE OF ALL STEEL DESCRIBED AS GALVANISED ARE TO BE THOROUGHLY AND EVENLY COATED. THE AVERAGE WEIGHT OF THE ZINC LAYER SHALL BE 610g/m<sup>2</sup> OF GALVANIZED SURFACE.
- 7.2 ALL DAMAGED GALVANIZED SURFACES AND ALL EDGES EXPOSED BY CUTTING AFTER GALVANIZING SHALL BE TREATED WITH TWO COATS OF ZINC PAINT SPRAYED IN ACCORDANCE WITH BS EN ISO 1461–1999.

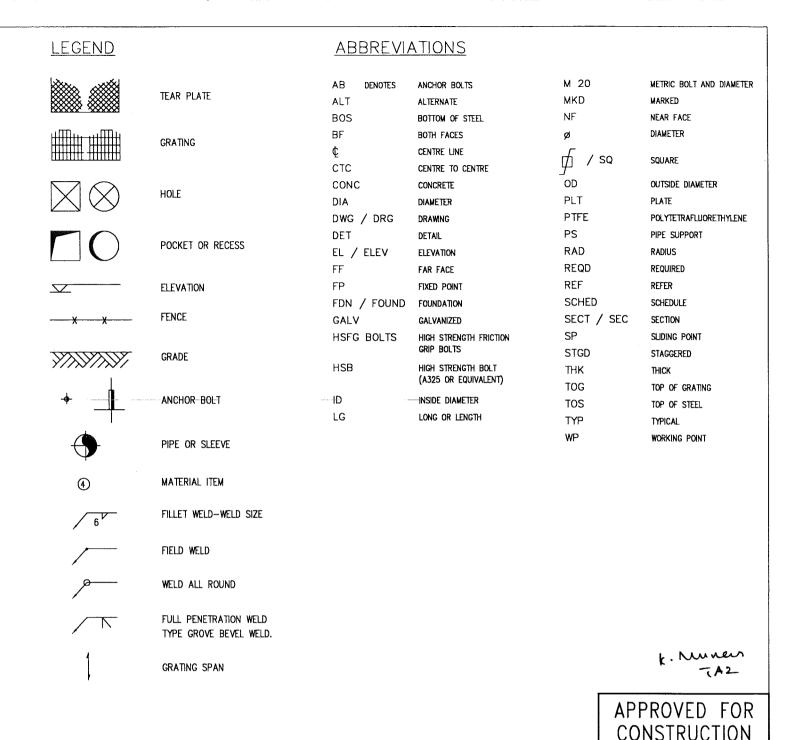
## 8.0 CORROSION PROTECTION

8.1 CORROSION PROTECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION SP-1279 PART N CIVIL AND BUILDING CONSTRUCTION SPECIFICATION, PAINTING AND DECORATING. FOR ALL STEEL STRUCTURES WITHIN OIL & GAS PLANT SHALL BE AS PER SP-1246.

## 9.0 EARTHING CONNECTIONS

9.1 PROVIDE EARTHING BOSS FOR ALL COLUMNS AND STAIR STRINGERS RESTING ON GROUND / FOUNDATIONS.

THE EARTHING BOSS DETAILS SHALL CONFIRM TO DRG No. STD-4-0305-01- -4



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Α	27.02.11	GCS	RB	3/.	APPROVED FOR CONSTRUCTION	IN.09.011	OSE/28N	
0	26.02.11	GCS	KBR	GSB	ISSUED FOR COMMENTS	IN.09.011	0SE/28N	
REV	DATE	DRAWN	TEAML	J.ENG.	DECCRIPTION	MDC N-	PROJ. ENG.	SIGNATURE
KEV	DAIL	BY CHECKED		CKED	DESCRIPTION	WBS No.	PDOA	PPROVAL

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

| SCALE : - CAD DRAWING

SUB AREA : NIMR SLUDGE PIT SYSTEMS NO. 16

DRWG.TYPE : STEEL STRUCTURE

: NIMR

AREA

رلى بارسونز ـ الصناعات العربية (محاصة

WorlevParsons - Arabian Industries (JV)

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

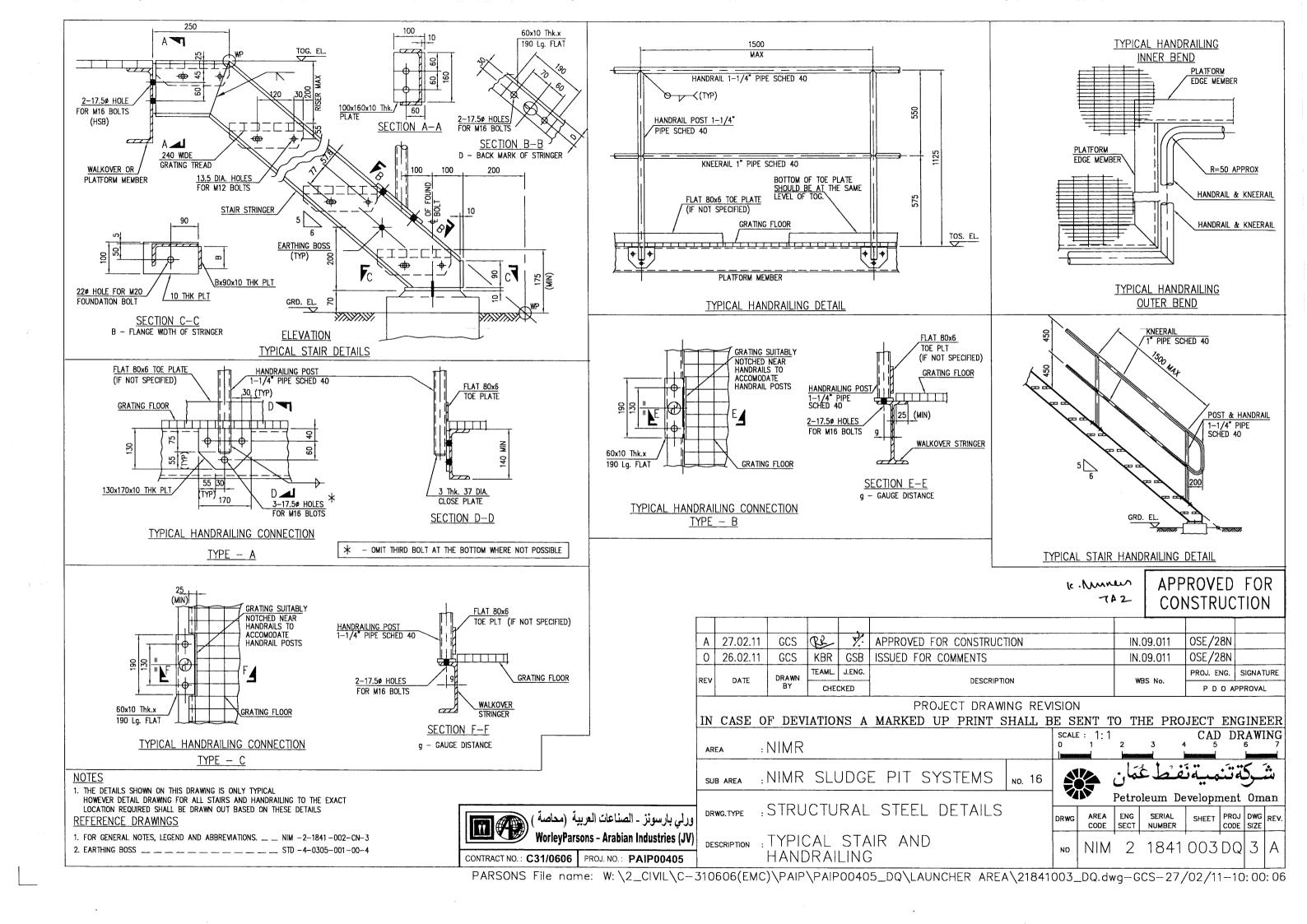
DESCRIPTION : GENERAL NOTES, LEGEND AND ABBREVIATIONS

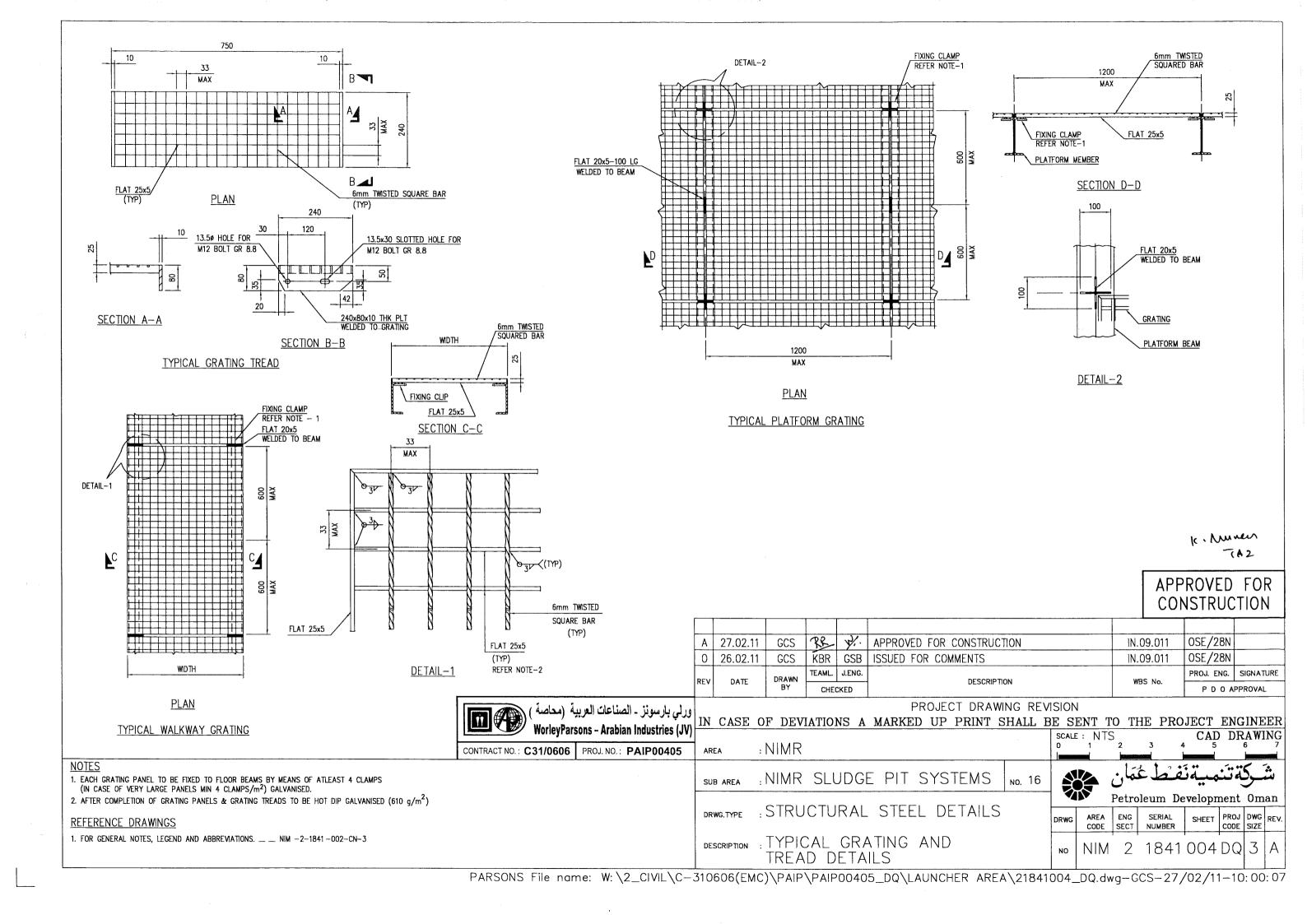
Petroleum Development Oman

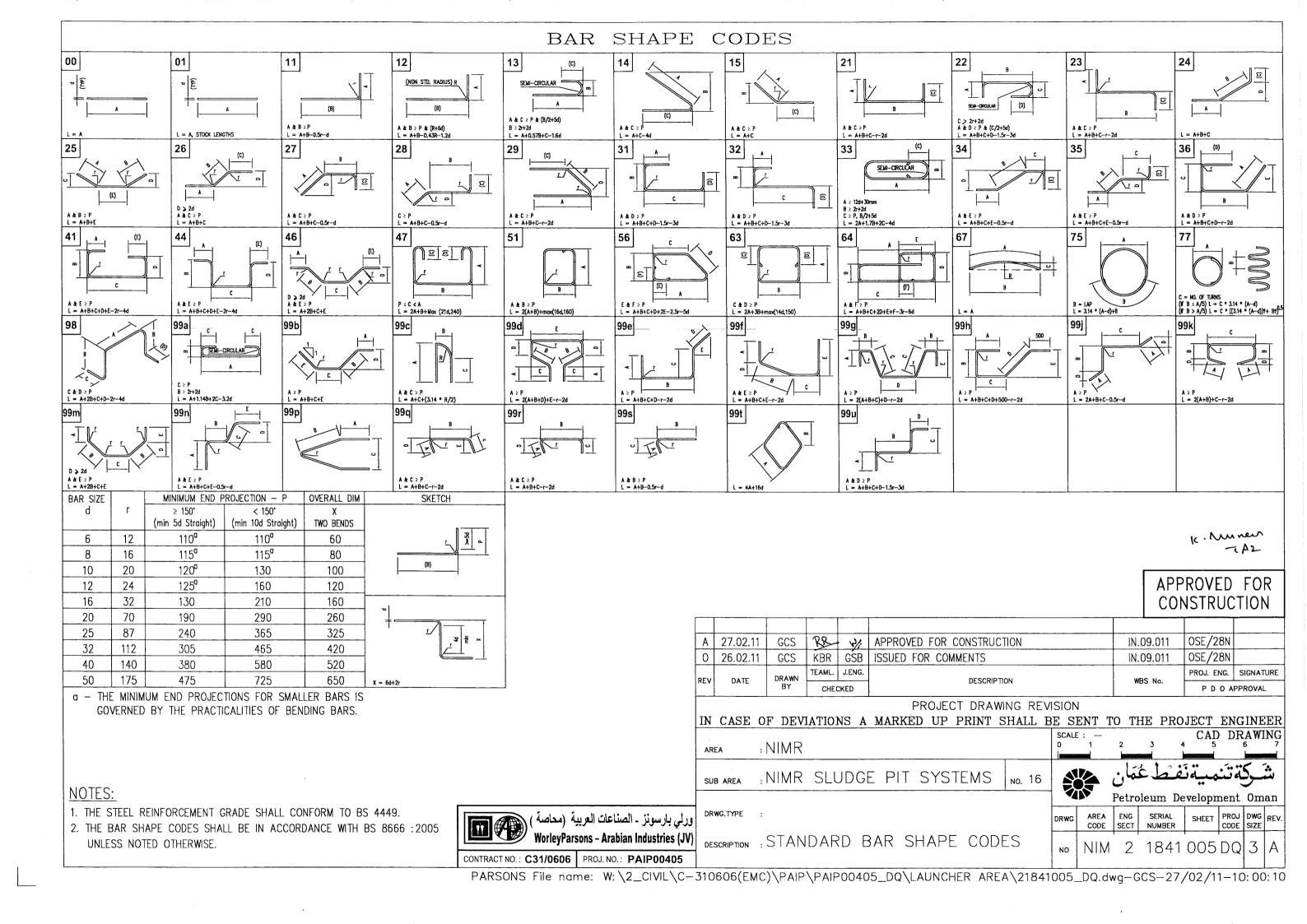
DRWG AREA CODE SECT NUMBER SHEET PROJ CODE SIZE REV.

NO NIM 2 1841 002 DQ 3 A

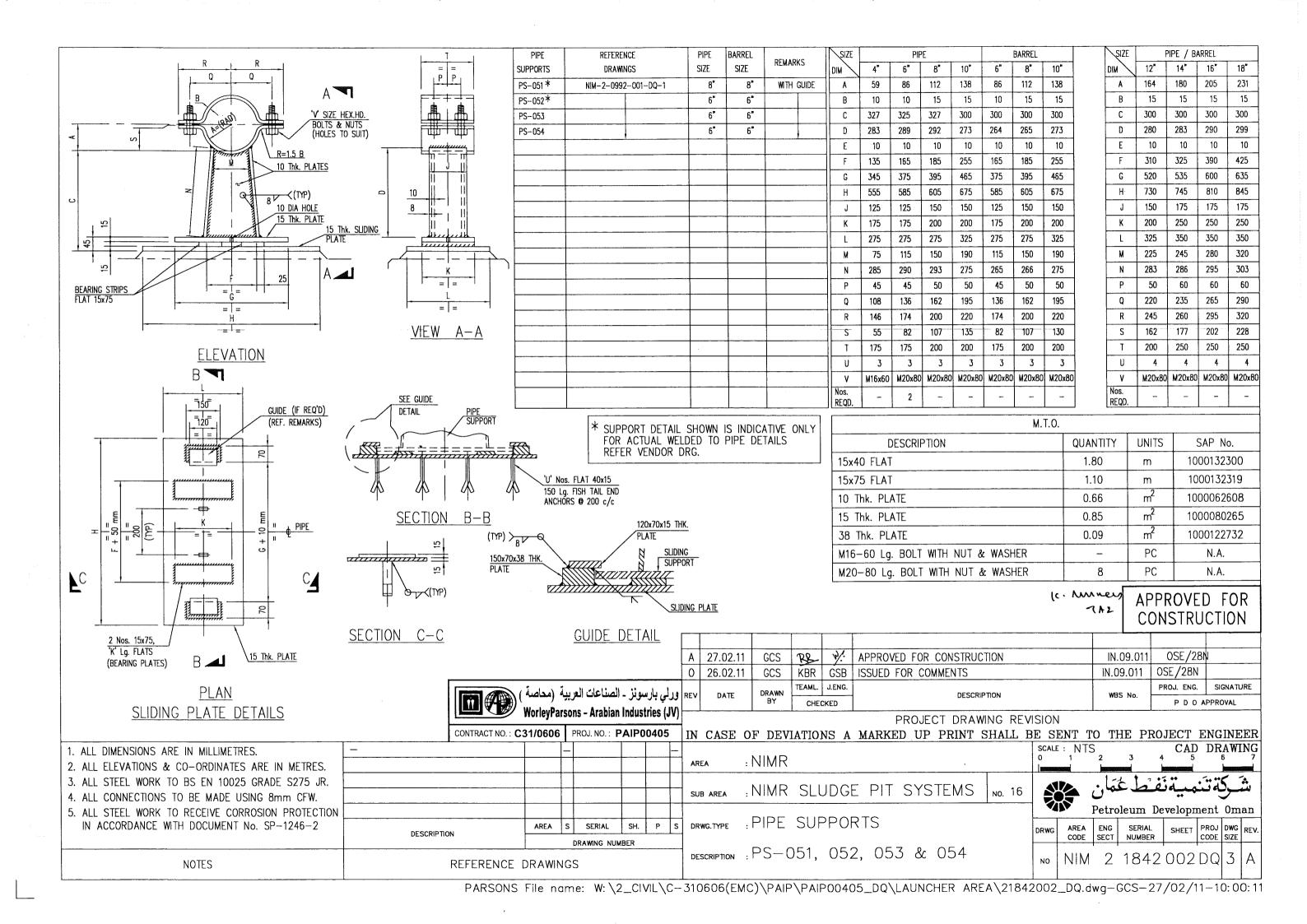
PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\21841002\_DQ.dwg-GCS-27/02/11-10:00:05

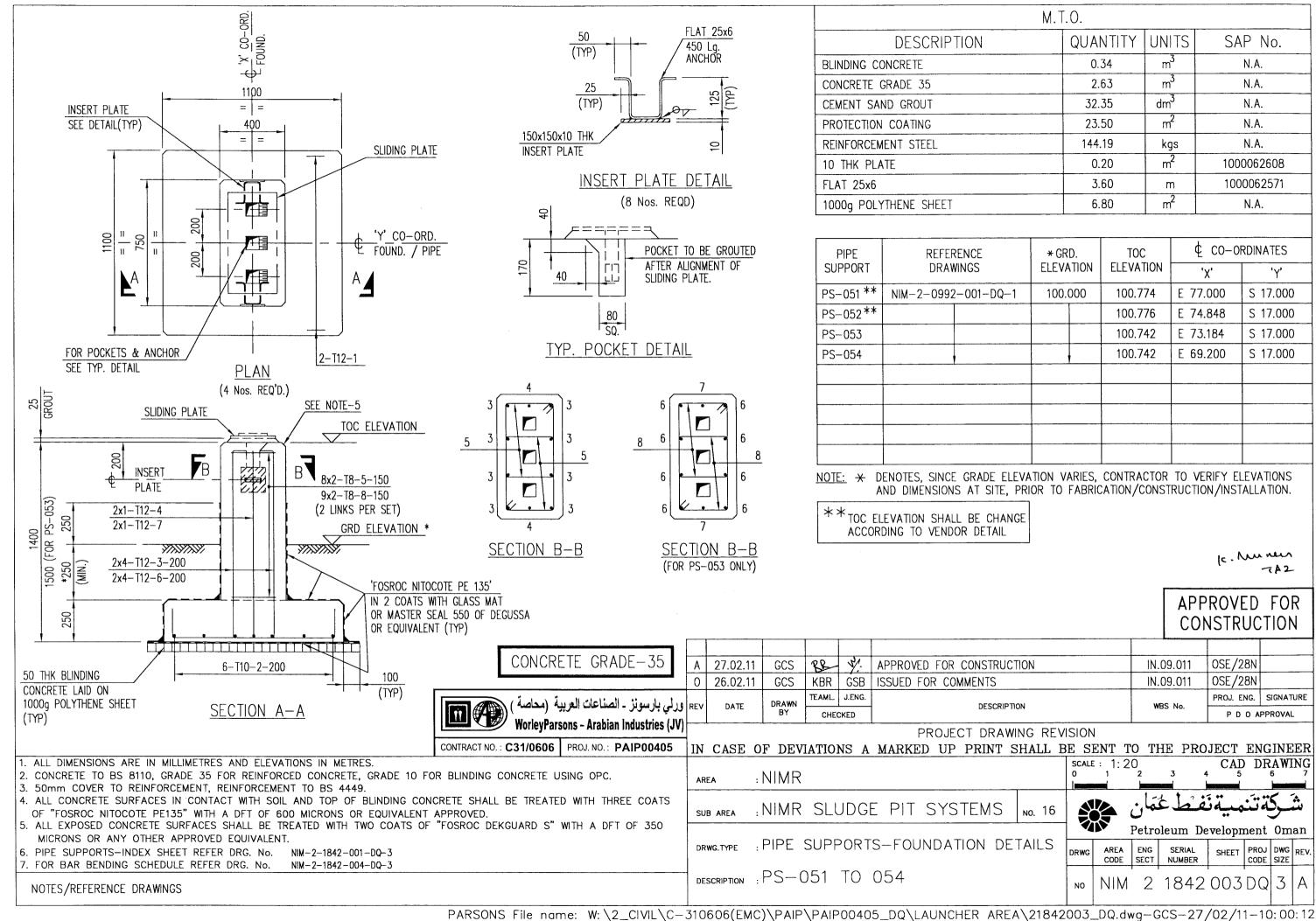






PIPE SUPPORT/	REFE	RENCE DR	AWING	S		PIPE SUPPORT/		REFI	ERENCE DRAWI	NGS		
SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDA DETAILS	TION	LOCATION PLAN	REMARKS	SLEEPER NUMBER		TEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PI	_AN	REMARKS
PS-001 TO 034	_		_		RECEIVER AREA	SL-001	_		-	_	_	-
PS-035 TO 050	_		_		SPARE	SL-002	_		_	_	_	-
PS-051	NIM-2-1842-002-DQ-3	NIM-2-1842-003-	DQ-3 NIM-	-2-0992-001-DQ-1	_	SL-003	_		_	_	_	-
PS-052					_	SL-004	_		_	_	-	-
PS-053					_	SL-005	_		_	_	-	_
PS-054					_	SL-006	<del>-</del>		-	_		_
PS-055	NIM-2-1842-005-DQ-3	NIM-2-1842-006-	DQ-3		_	SL-007	_		-	_	_	-
PS-056	NIM-2-1842-008-DQ-3	NIM-2-1842-009-	DQ-3		_	SL-008	_		_	_	-	-
PS-057	NIM-2-1842-011-DQ-3	_		-3-2132-002-DQ-1	_	SL-009	_		_	_	-	-
PS-058	NIM-2-1842-012-DQ-3			-2-0992-001-DQ-1		SL-010	_		_	_		_
PS-059	NIM-2-1842-013-DQ-3	NIM-2-1842-006-		2 0002 001 54 1		SL-011		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1_		-
PS-060	NIM-2-1842-014-DQ-3					SL-012	<u> </u>		_			
PS-061	NIM-2-1842-012-DQ-3	111111-2-1042-003-	DQ-3			SL-013						
PS-062	NIM-2-1842-015-DQ-3	NIIM 2 1942 000	DO 7		_							_
		_NIM-Z-104Z-UUD-	חת-2			SL-014	_		_	-		
PS-063	NIM-2-1842-016-DQ-3		20 7			SL-015	_		_		<del>-</del>	
PS-064	NIM-2-1842-015-DQ-3				_	SL-016	_		-	_	-	. ,
PS-065	NIM-2-1842-015-DQ-3	NIM-2-1842-006-	DQ-3		_	SL-017	-		_	-		
PS-066	NIM-2-1842-016-DQ-3	_			_	SL-018	-		_	-	-	-
PS-067 TO 075		_	-		SPARE	SL-019			_	-	-	-
U BOLT DET.	NIM-2-1842-017-DQ-3				_	SL-020	-				-	
PIPE GUIDE DET.	NIM-2-1842-018-DQ-3		-		_	SL-021			_			
						SL-022	_		_	_	-	-
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## **BAR BENDING SCHEDULE**

JOB NO.: PART ID.: PAIP00238

PRODUCTION STATION

PS-051 TO 054

Document No.: NIM-2-1842-004-DQ-4

Revision No.:

GCS

Prepared by: Checked by:

PNG 72

Date:

27.02.11

REF. DWG NO.: NIM-2-1842-003-DQ-3

Total MTO for Rebars.

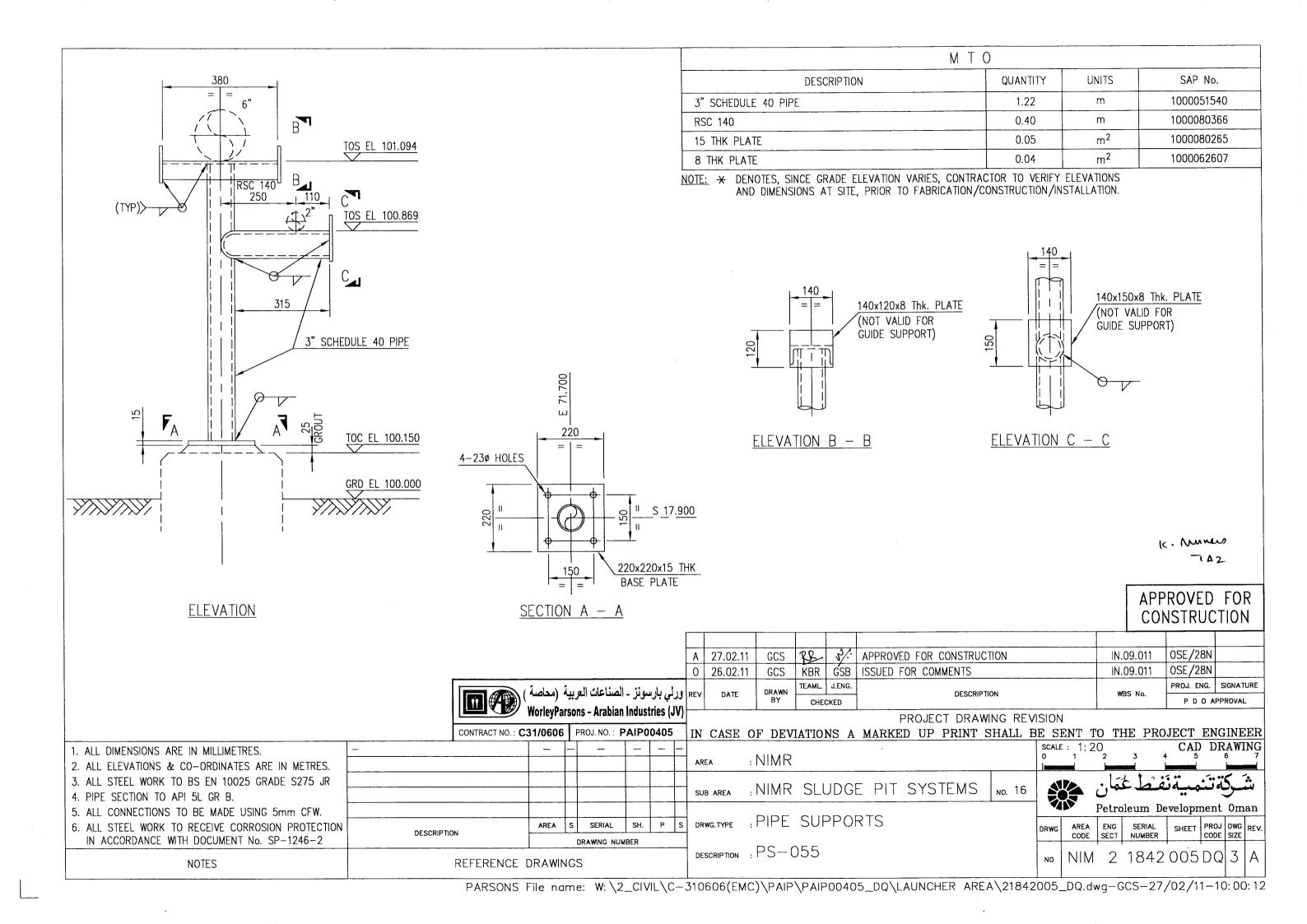
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		110.55	30.60	91.00				
Weight (Kgs)		44.22	18.98	80.99				
Total Weight (Kgs)	)		,					144.190

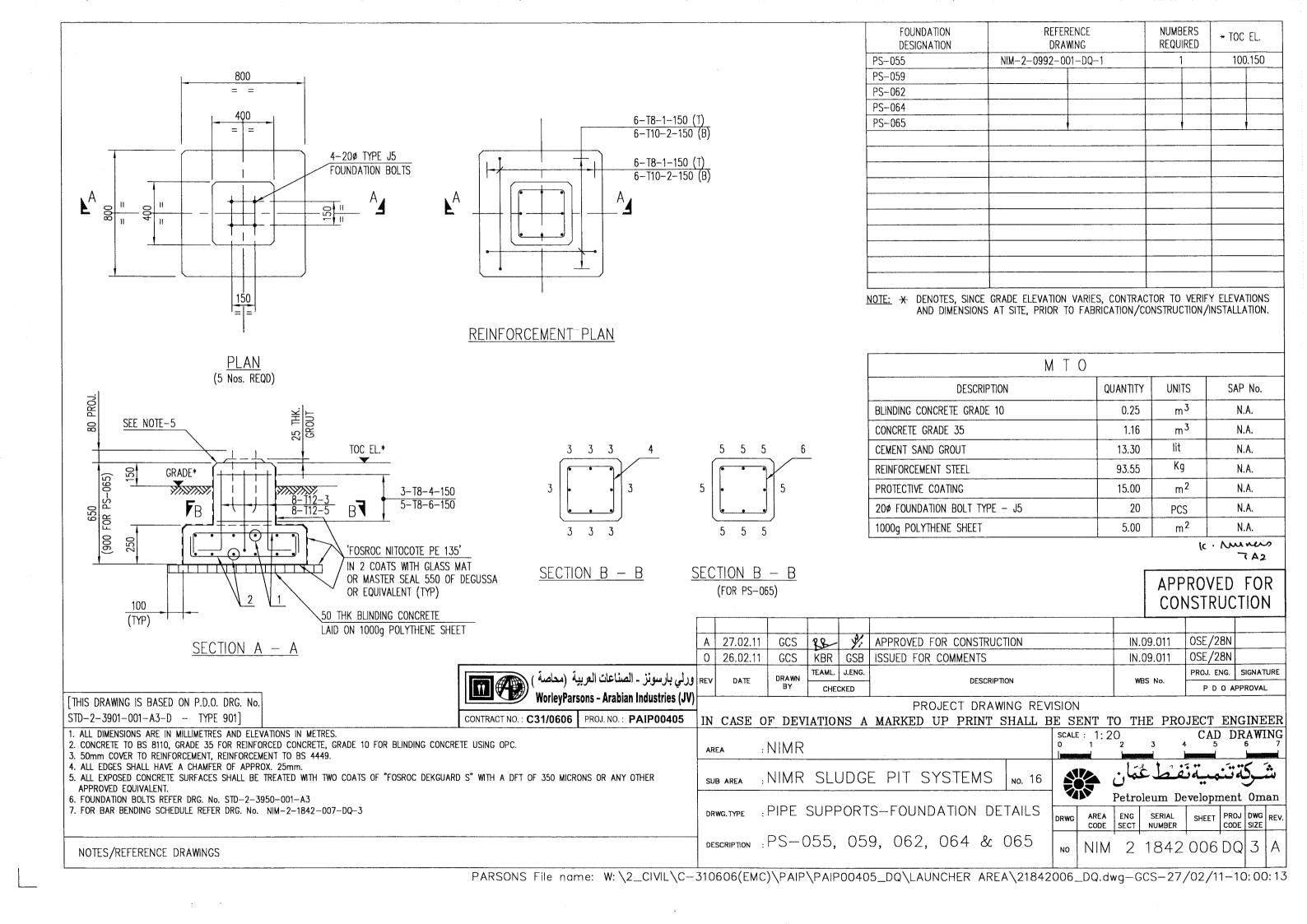
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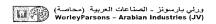
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	$\mathbf{A}^{\star}$	B,	C,	$\mathbf{D}_{\boldsymbol{\tau}}$	E/R*
PS-051 TO 054	1	T12	4	2	8	1275	21	150	1000	150		
	2	T10	4	6	24	1275	21	150	1000	150		
	3	T12	3	8	24	2100	31	100	1300	650	100	
	4	T12	3	2	6	1575	11	300	1290			
	5	T8	3	16	48	1675	51	450	300			
	6	T12	1	8	8	2200	31	100	1400	650	100	
	7	T12	1	2	2	1675	11	300	1390			
	8	Т8	1	18	18	1675	51	450	300			
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Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm







### **BAR BENDING SCHEDULE**

JOB NO.: PART ID.: PAIP00238

PRODUCTION STATION

PS-055,059,062,064 & 065

Document No.: NIM-2-1842-007-DQ-4

Revision No.: A

GCS

Prepared by: Checked by:

Date:

PNG Q2 27.02.11

REF. DWG NO.: NIM-2-1842-006-DQ-3

Total MTO for Rebars.

Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32	
Length of Bar (m)		78.88	55.50	31.00					
Weight (Kgs)		31.55	34.41	27.59					
Total Weight (Kgs) 93.53									

		I		T		<u> </u>				[		
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar †	Shape code	$\mathbf{A}^{\star}$	B*	C*	D,	E/R*
PS-055,059,062,	1	Т8	5	12	60	925	21	125	700	125	3 1 10	
064 & 065	2	T10	5	12	60	925	21	125	700	125		
	3	T12	4	8	32	725	11	200	530			
	4	Т8	4	3	12	1375	51	300	300			
	5	T12	1	8	8	975	11	200	780			
	6	Т8	1	5	5	1375	51	300	300			
			A-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1									
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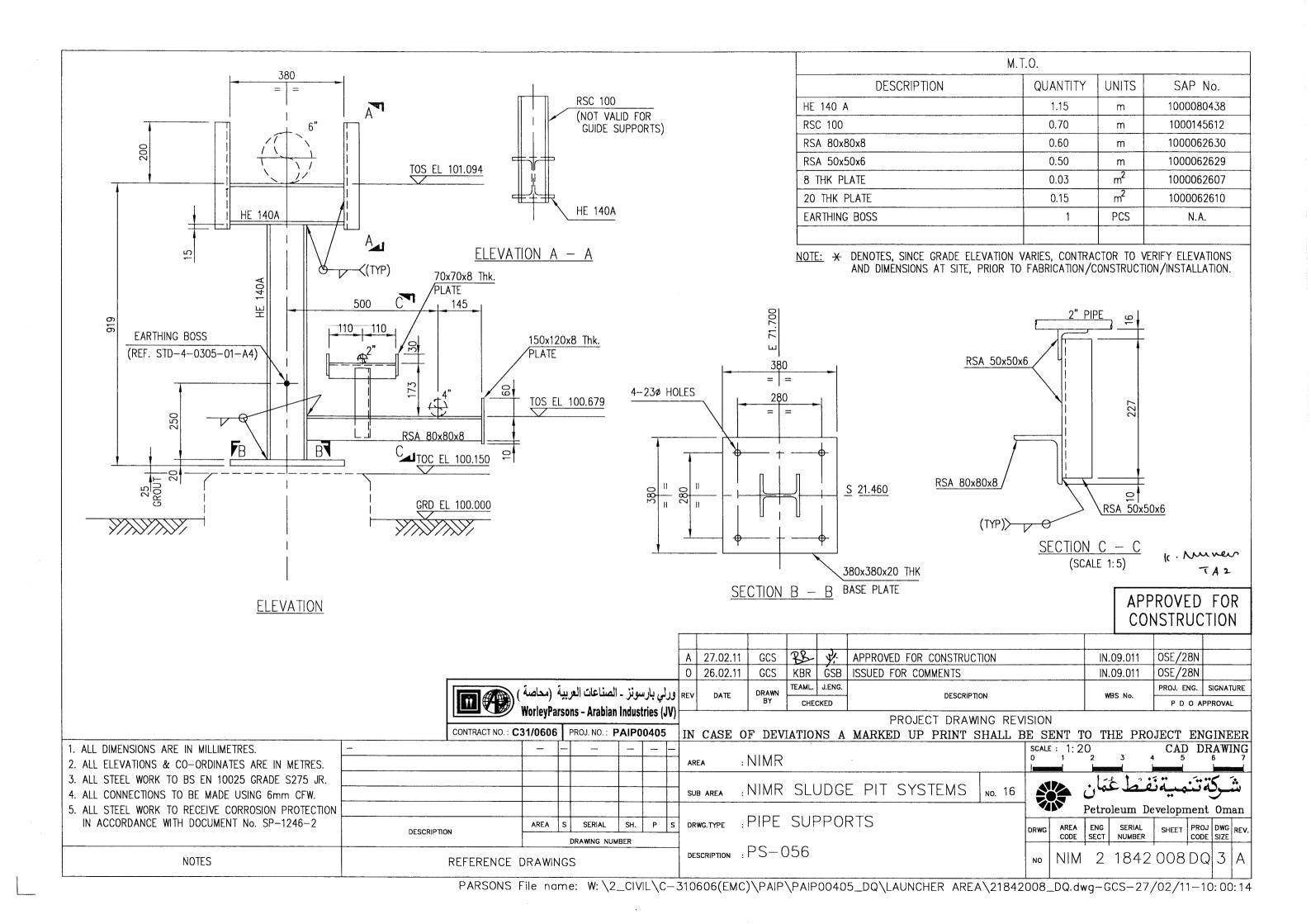
This schedule complies with BS 8666: 2005

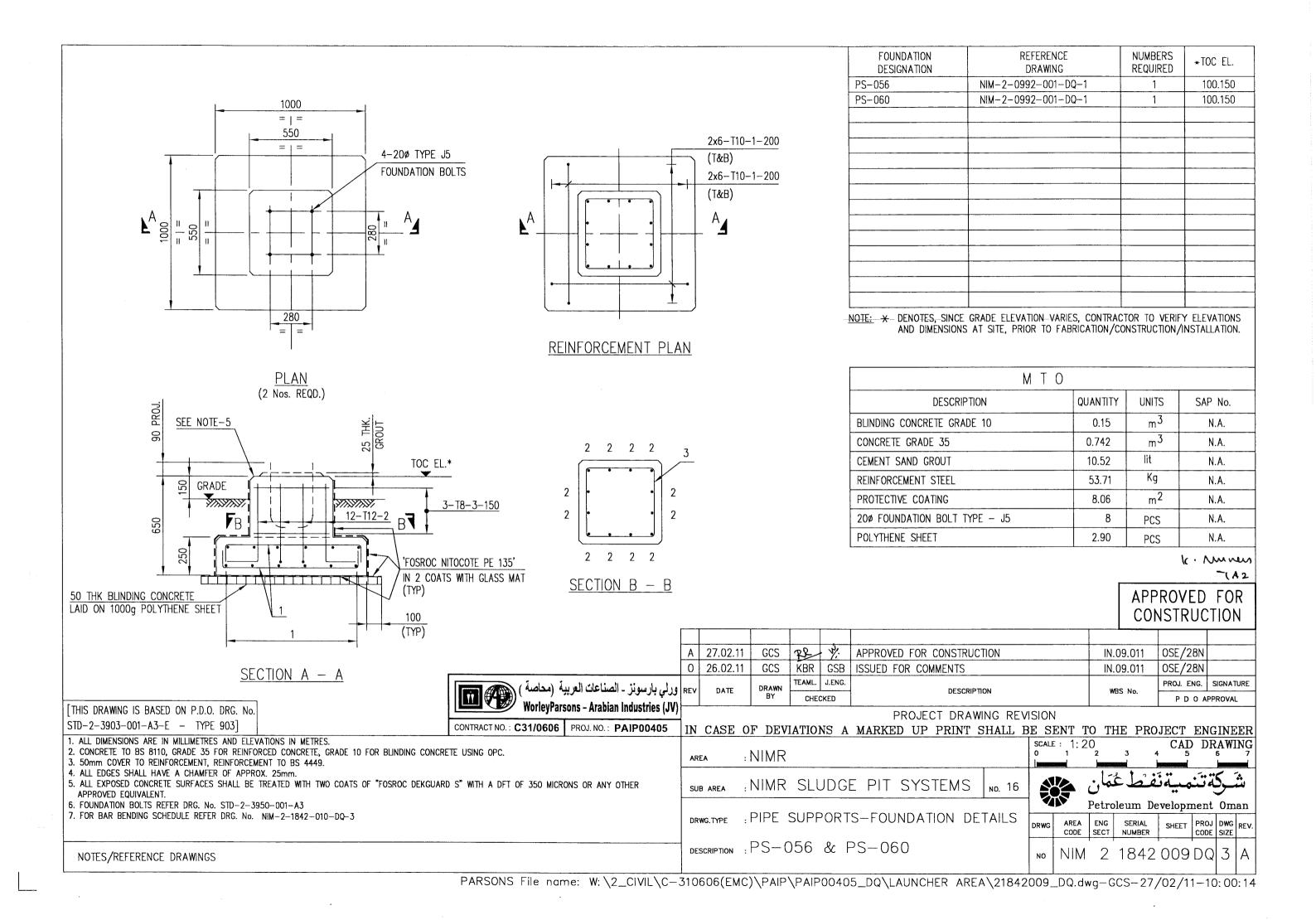
All dimensions are in mm

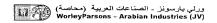
Refer to Bar shape Code drawing

\* Specified in multiples of 5 mm

† Specified in multiples of 25 mm







## **BAR BENDING SCHEDULE**

JOB NO.: PART ID.: PAIP00238

PRODUCTION STATION

PS-056 & 060

REF. DWG NO.: NIM-2-1842-009-DQ-3

Document No.: NIM-2-1842-010-DQ-4

Revision No.: A

Prepared by: Checked by:

GCS PNG

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		11.85	54.00	17.40				
Weight (Kgs)		4.74	33.48	15,49				
Total Weight (Kgs)	)							53.710

Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B <sup>*</sup>	C,	D,	E/R*
PS-056 & 060	1	T10	2	24	48	1125	21	125	900	125		
	2	T12	2	12	24	725	11	200	530			
	3	Т8	2	3	6	1975	51	450	450			
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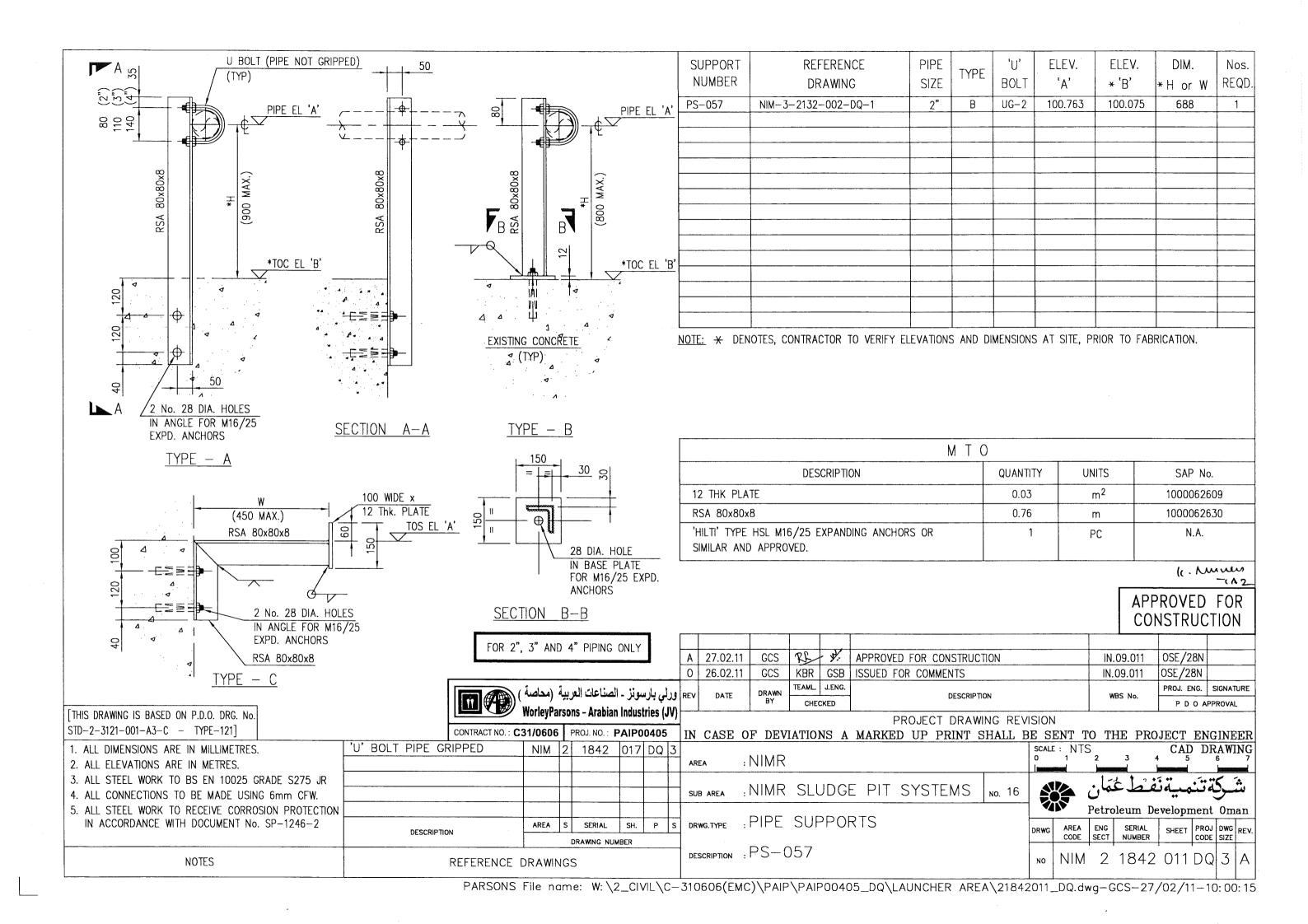
This schedule complies with BS 8666 : 2005

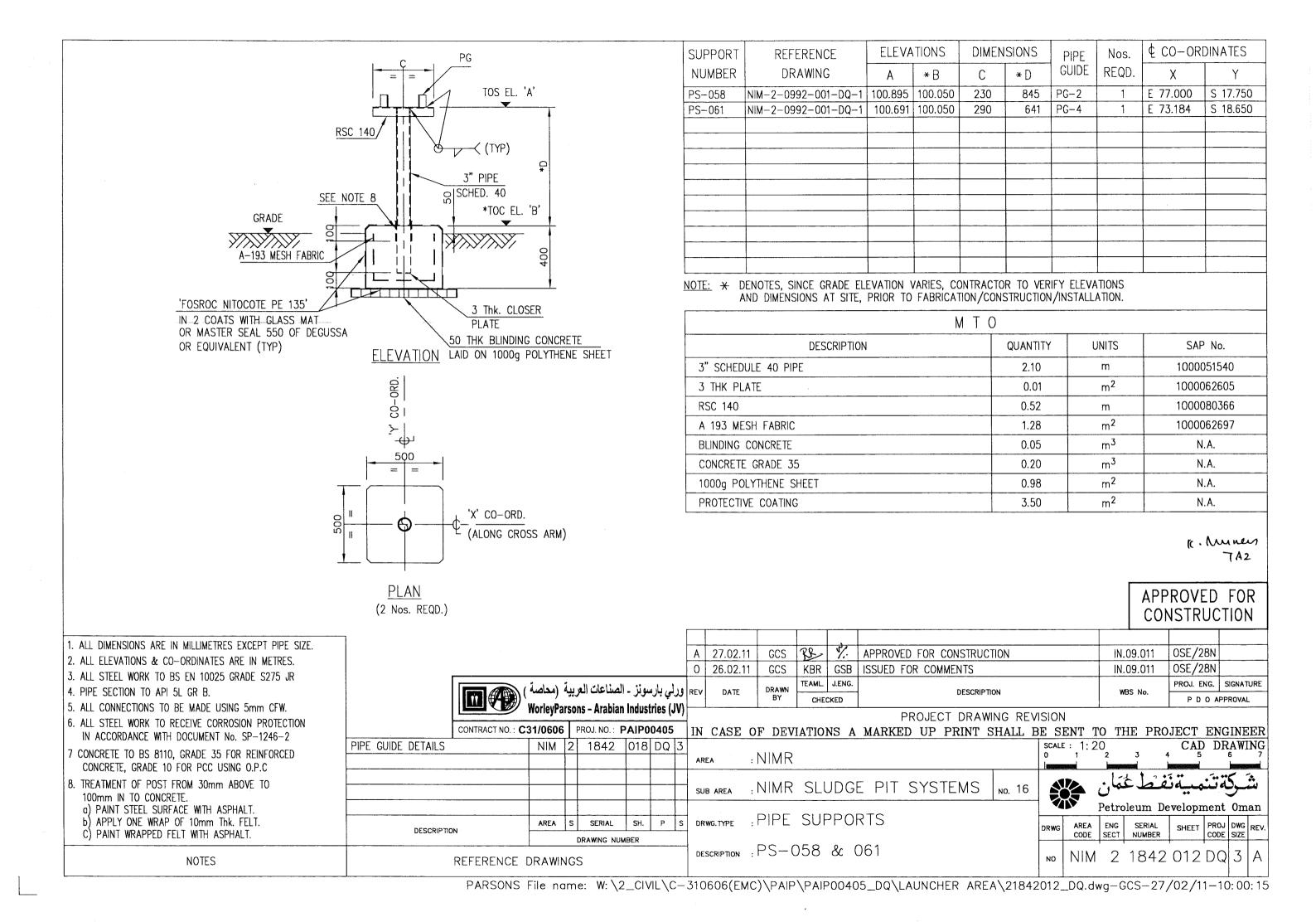
All dimensions are in mm

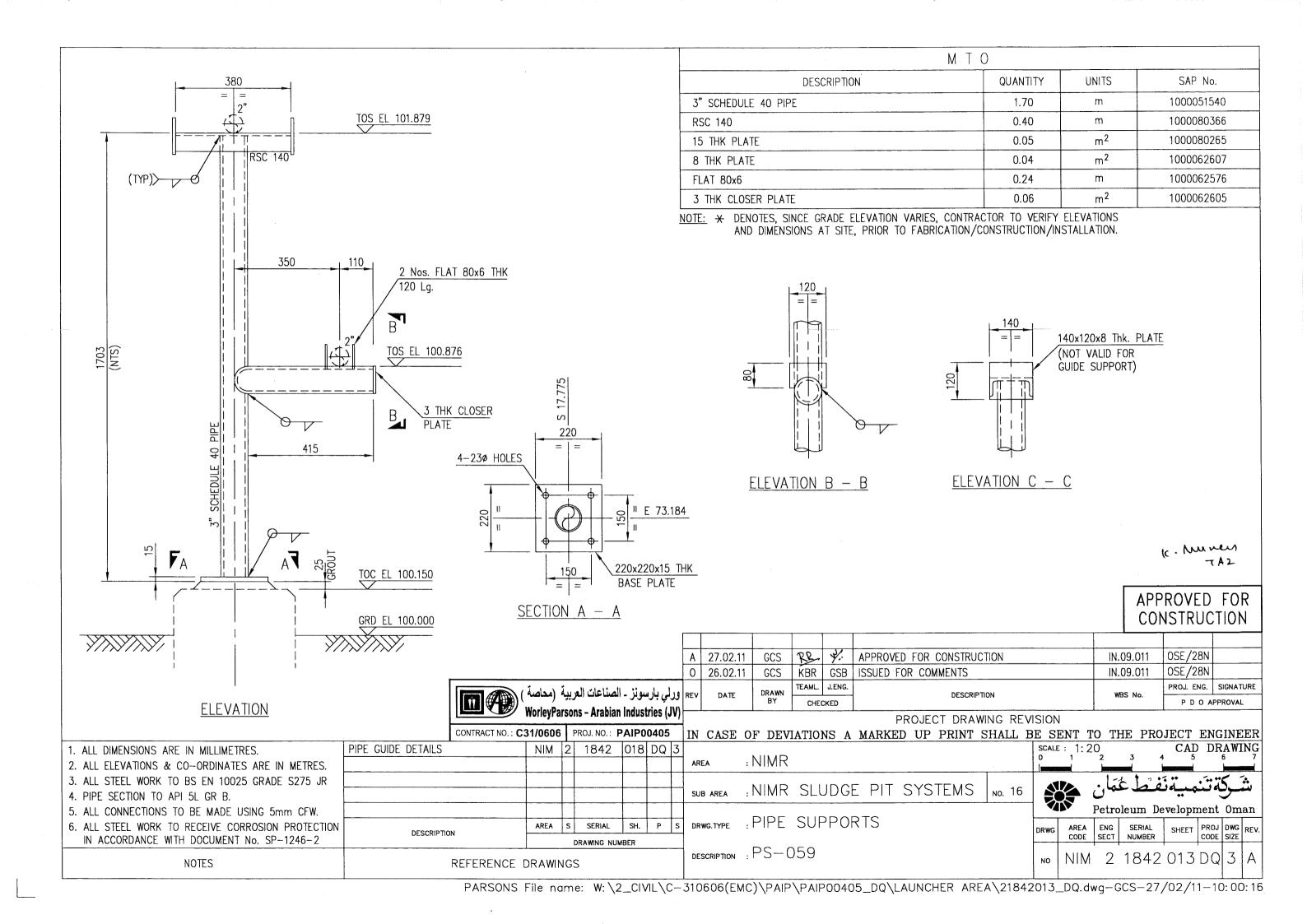
Refer to Bar shape Code drawing

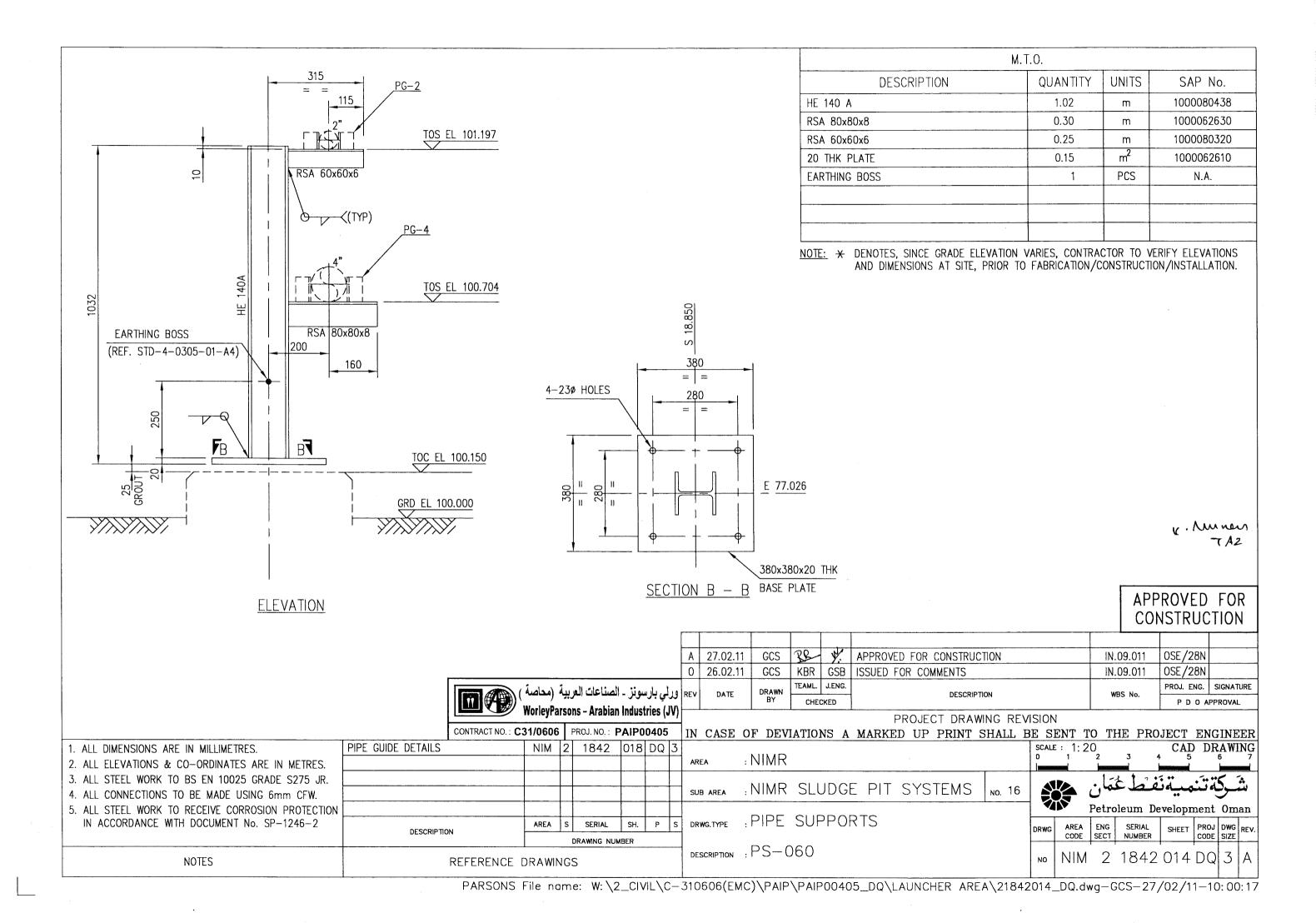
\* Specified in multiples of 5 mm

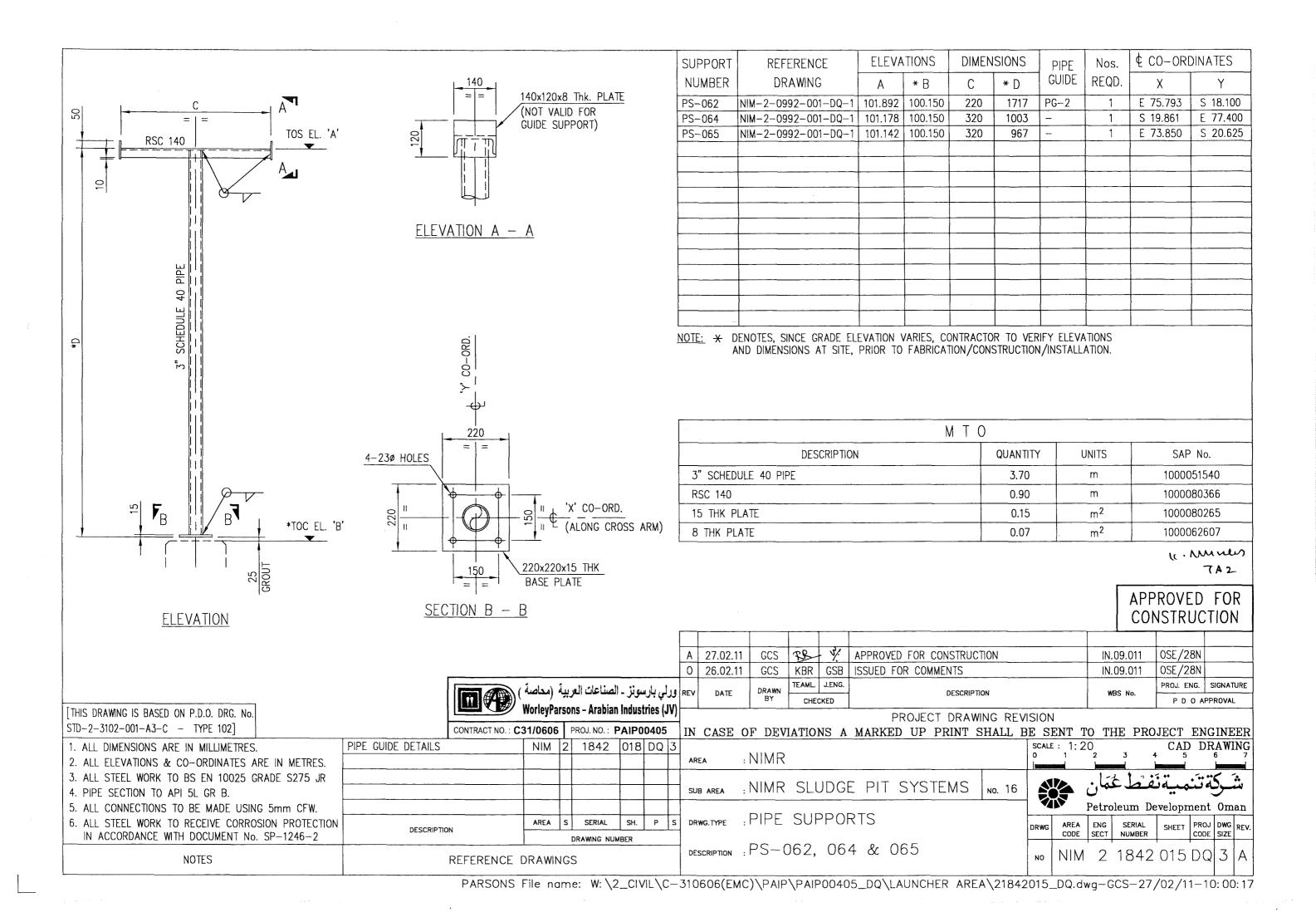
† Specified in multiples of 25 mm

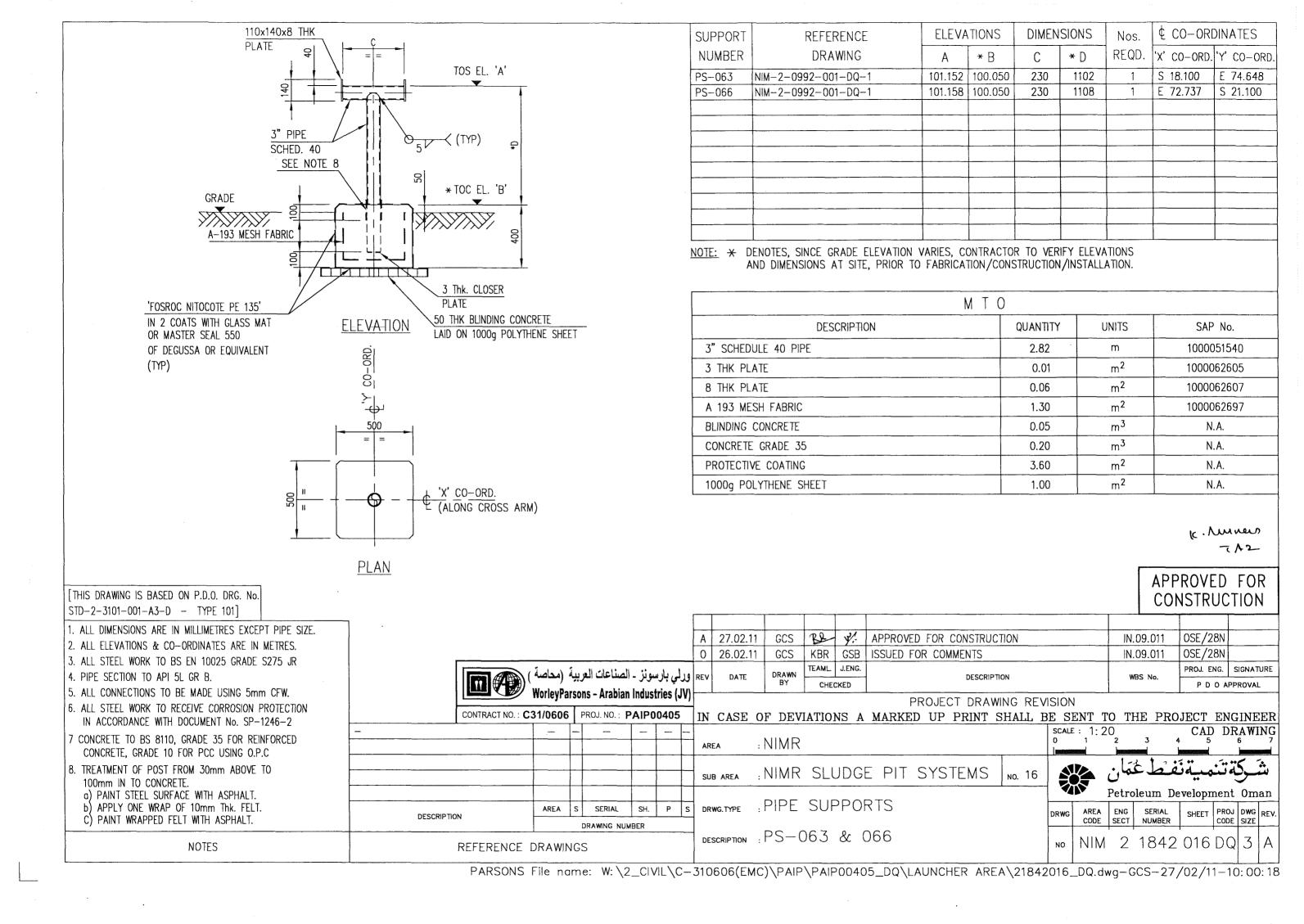


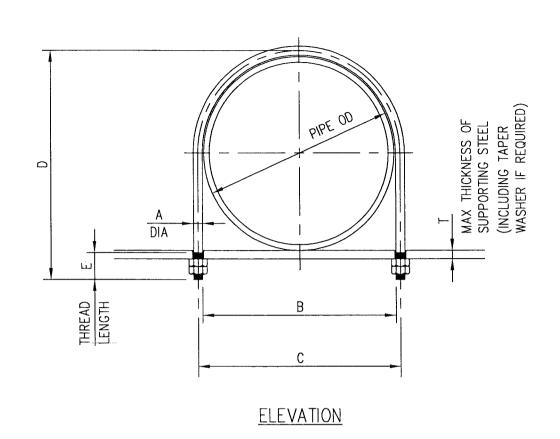












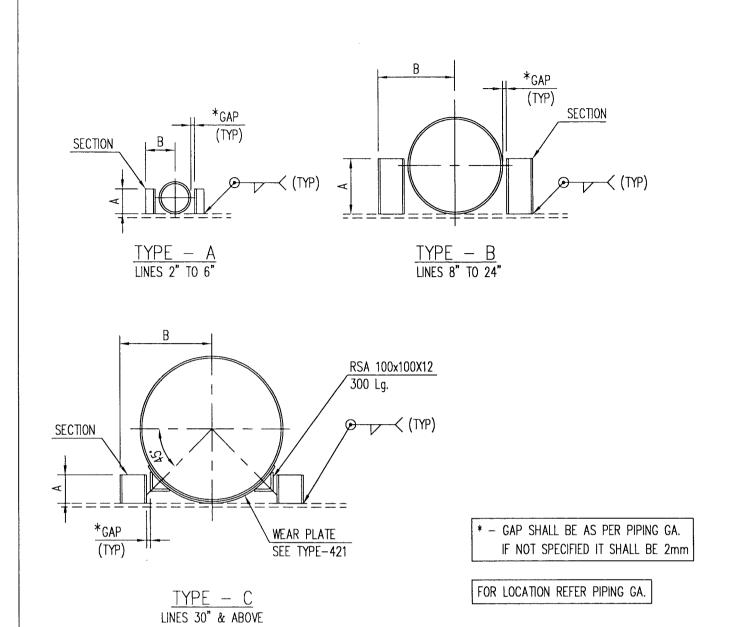
	MATERIAL GUIDE												
	BAR		NUTS	LOCKNUTS									
SIZE	SAP NO No.	SIZE	SAP NO:	SIZE	SAP No.								
8	1000080335	М8	1000063795	М8	1000080222								
10	1000062586	M10	1000063796	M10	1000063819								
16	1000062588	M16	1000063798	M16	1000063820								
20	N.A.	M20	1000063799	M20	1000063821								
24	N.A.	M24	1000120055	M24	1000120066								

PIPE GUIDE	NOMINAL I	PIPE SIZE	PIPE			DIMEN	SIONS			Nos.
DESIGNATION	INCHES	ММ	OD	А	В	C	D	E	T	REQD.
UG-0.5	1/2"	15	21.3	8	22	30	50	25	10	_
UG-0.75	3/4"	20	26.7	8	27	35	60	25	10	_
UG-1	1"	25	33.4	8	37	45	65	25	10	
UG-1.5	11/2"	40	48.3	10	50	60	90	35	16	_
UG-2	2"	50	60.3	10	65	75	100	35	16	1
UG-3	3"	80	88.9	16	89	105	150	50	19	
UG-4	4"	100	114.3	16	119	135	175	50	19	_
UG-6	6"	150	168.3	20	170	190	235	55	19	_
UG-8	8"	200	219.1	20	225	245	295	60	19	_
UG-10	10"	250	273.0	20	280	300	350	60	22	_
UG-12	12"	300	323.9	20	_330	-350	400	60	_22	_
UG-14	14"	350	355.6	24	361	385	440	65	22	_
UG-16	16"	400	406.4	24	411	435	490	65	22	_
UG-18	18"	450	457.0	24	461	485	540	70	22	
UG-20	20"	500	508.0	24	516	540	590	70	22	_
UG-24	24"	600	610.0	24	616	640	700	70	22	_
UG-28	28"	700	711.2	24	711	735	800	70	22	_
UG-30	30"	750	762.0	24	766	790	850	70	22	_

1c. Muneus 7/12

# APPROVED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION OSE/28N IN.09.011 A 27.02.11 GCS OSE/28N 0 26.02.11 GCS KBR | GSB | ISSUED FOR COMMENTS IN.09.011 PROJ. ENG. SIGNATURE REV ورلي بارسونز - الصناعات العربية (محاصة ) DRAWN DESCRIPTION WBS No. DATE P D O APPROVAL WorleyParsons - Arabian Industries (JV) THIS DRAWING IS BASED ON P.D.O. DRG. No. PROJECT DRAWING REVISION STD-2-3817-001-A3-D - TYPE 817] CONTRACT NO.: C31/0606 PROJ. NO.: **PAIP00405** IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER CAD DRAWING 1. ALL DIMENSIONS ARE IN MILLIMETRES. : NIMR 2. EACH BOLT TO BE SUPPLIED WITH 2 NUTS & 2 LOCKNUTS. .NIMR SLUDGE PIT SYSTEMS 3. MATERIAL-BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8 Petroleum Development Oman :PIPE SUPPORTS 4.U-BOLT CORROSION PROTECTION SHALL COMPLY SERIAL SH. DESCRIPTION CODE WITH SP-1246-2 DRAWING NUMBER DESCRIPTION : 'U' BOLT (PIPE GRIPPED) DETAILS NIM 2 1842 017 DQ 3 A NOTES REFERENCE DRAWINGS



	PIPE GUIDE		PIPE SIZE	PIPE OD	DIMEN			SECTION	Nos. REQD.
	DESIGNATION PG-2	INCHES 2"	<u>MM</u> 50	60.3	55	B 82	RS	A 50x50x6	4
		3"	80	88.9	80	97		A 50x50x6	_
	PG-3								
	PG-4	4"	100	114.3	80	110		A 50x50x6	2
-	PG-6	6"	150	168.3	110	137	RS	A 50x50x6	118
	PG-8	8"	200	219.1	160	212	RS	C 100	
	PG-10	10"	250	273.0	160	239	RS	C 100	_
	PG-12	12"	300	323.9	230	264	RS	C 100	_
	PG-14	14"	350	355.6	230	280	RS	C 100	_
	PG-16	16"	400	406.4	230	306	RS	C 100	
	PG-18	18"	450	457.0	260	371	RS	C 140	
	PG-20	20"	500	508.0	290	396	RS	C 140	_
	PG-24	24"	600	610.0	340	447	RS	C 140	_
	PG-30	30"	750	762.0	150	464	RS	C 140	_
	PG-32	32"	800	813.0	150	492	RS	SC 140	_
	PG-40	40"	1000	1016.0	200	588	RS	SC 160	-
				МТ	0			•	
		DESCRI	PTION		QUANTITY	UNITS		SAP	No.
	RSC 160				_	m		100006	2643
	RSC 140				_	m		100008	0366
	RSC 100				_	m		100014	5612
	RSA 100x100x12				_ m		10001		2036
	RSA 50x50x6				26.72	m		100006	
									uner JA2

APPROVED FOR CONSTRUCTION

GCS RB V. OSE/28N APPROVED FOR CONSTRUCTION IN.09.011 A 27.02.11 0 26.02.11 GCS KBR | GSB IN.09.011 OSE/28N ISSUED FOR COMMENTS TEAML. J.ENG. PROJ. ENG. | SIGNATURE DRAWN BY DESCRIPTION DATE CHECKED P D O APPROVAL PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

ورلي بارسونز - الصناعات العربية (محاصة )

WorleyParsons - Arabian Industries (JV)

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405 | IN

REFERENCE DRAWINGS

DESCRIPTION

SERIAL

DRAWING NUMBER

PROJ. NO.: PAIP00405 IN CA

area : NIMR

:NIMR SLUDGE PIT SYSTEMS No. 16

RWG.TYPE : PIPE SUPPORTS

DESCRIPTION : PIPE GUIDE DETAILS

Petroleum Development Oman

AREA ENG SERIAL SHEET PROJ DWG REV.
NIM 2 1842 018 DQ 3 A

PARSONS File name: W: \2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\21842018\_DQ.dwg-GCS-27/02/11-10:00:19

[THIS DRAWING IS BASED ON P.D.O. DRG. No.

STD-2-3604-001-A3-C - TYPE 604]

1. ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT PIPE SIZE

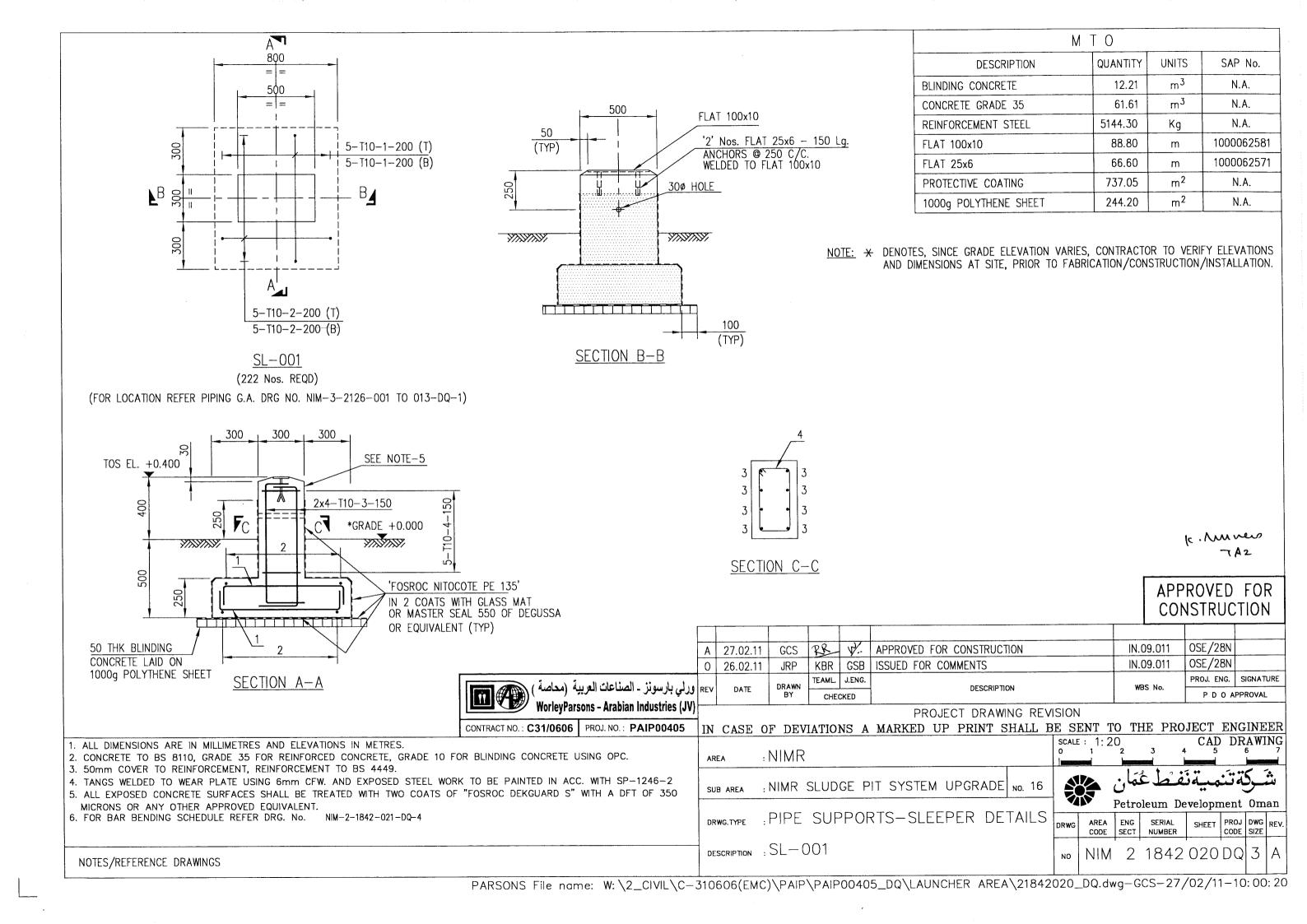
2. ALL STEEL WORK EXCEPT REINFORCING PLATE TO TO BS EN 10025 GR S275 JR

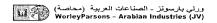
3. ALL CONNECTIONS TO BE MADE USING 6mm CFW.

4. STEELWORK CORROSION PROTECTION SHALL COMPLY WITH SP-1246-2

NO

NOTES





JOB NO.: PART ID.: PAIP00405

PRODUCTION STATION

Revision No.: A

Document No.: NIM-2-1842-021-DQ-4

SL-001

Prepared by:

GCS

Checked by:

PNG QX

Date:

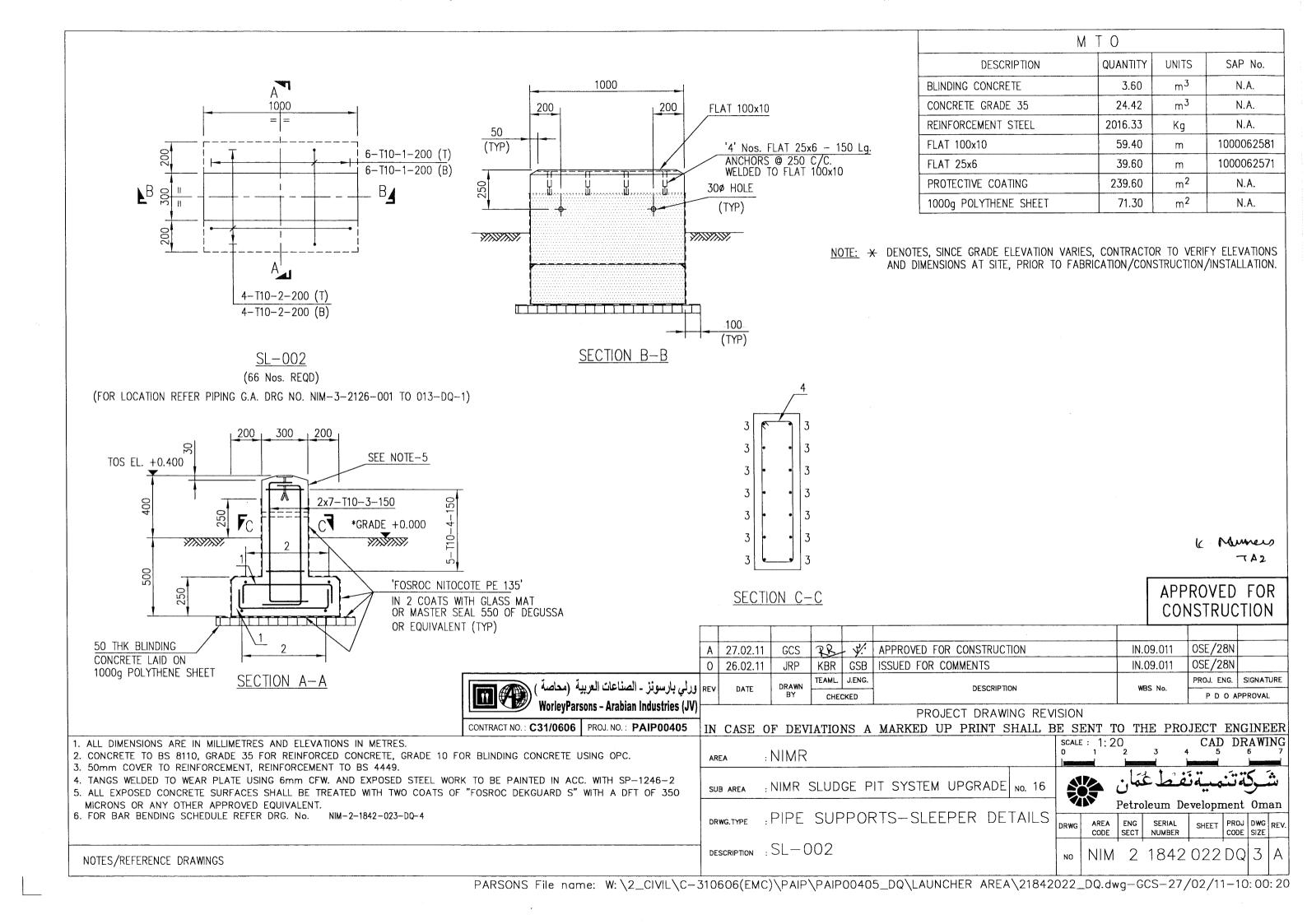
27.02.11

REF. DWG NO.: NIM-2-1842-020-DQ-3

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			8297.25					
Weight (Kgs)			5144.30					
Total Weight (Kgs	)				,			5144.300

Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A.	B*	C,	D*	E/R*
SL-001	1	T10	222	10	2220	1075	21	150	800	150		
	2	T10	222	10	2220	975	21	150	700	150		
	3	T10	222	8	1776	1250	21	150	750	370		
	4	T10	222	5	1110	1375	51	200	400			
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JOB NO.:

PAIP00405

Document No.: NIM-2-1842-023-DQ-4

PART ID.:

PRODUCTION STATION

Revision No.: A

SL-002

Prepared by: Checked by: GCS PNG

Date:

27.02.11

REF. DWG NO.: NIM-2-1842-022-DQ-3

Total MTO for Rebars.

Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			3252.15					
Weight (Kgs)			2016.34					
Total Weight (Kgs	)							2016,340

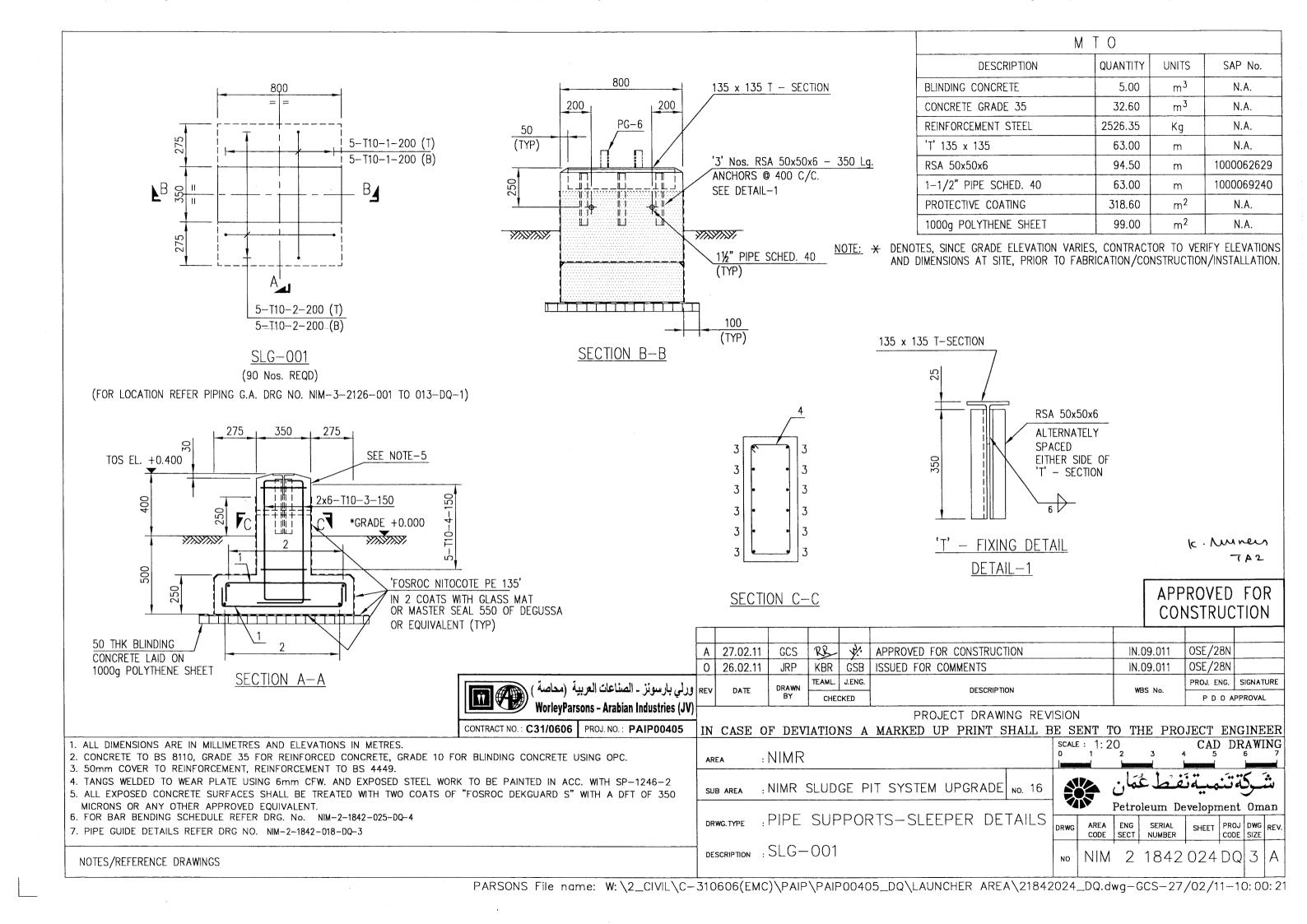
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B	c.	D,	E/R*
SL-002	1	T10	66	12	792	875	21	150	600	150		
	2	T10	66	8	528	1175	21	150	900	150		
	3	T10	66	14	924	1250	21	150	750	370		
	4	T10	66	5	330	2375	51	200	900			
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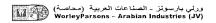
This schedule complies with BS 8666: 2005

All dimensions are in mm

Refer to Bar shape Code drawing

\* Specified in multiples of 5 mm





JOB NO.: PART ID.: PAIP00405

Document No.: NIM-2-1842-025-DQ-4

PRODUCTION STATION

Revision No.:

GCS

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SLG-001

Prepared by: Checked by:

PNG

REF. DWG NO.: NIM-2-1842-024-DQ-3

Date:

27.02.11

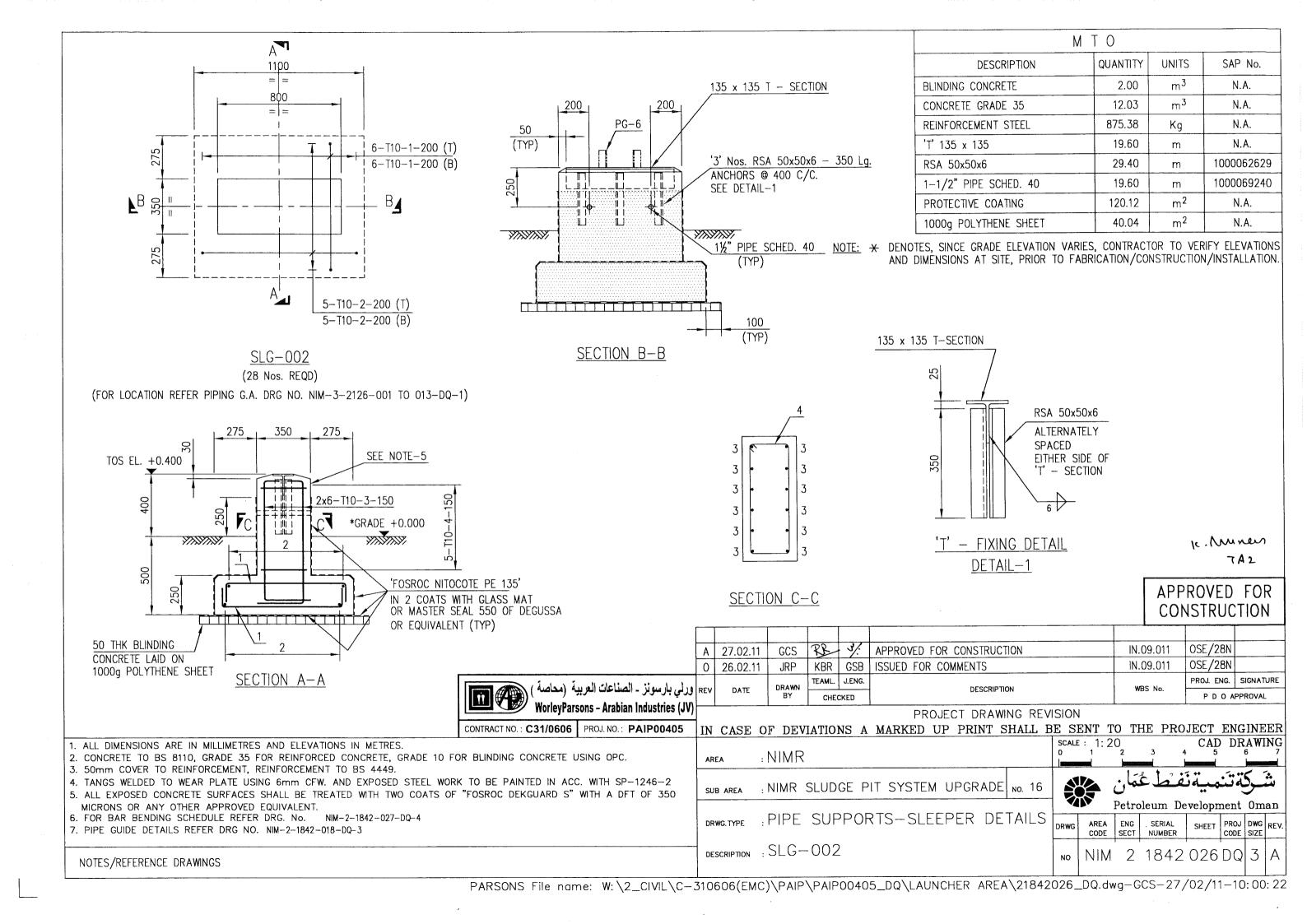
Total MTO for Rebars

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			4074.75					
Weight (Kgs)			2526.35					
Total Weight (Kgs)	)							2526.350

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	В*	C,	D,	E/R*
SLG-001	1	T10	90	10	900	1075	21	150	800	150		
	2	T10	90	10	900	975	21	150	700	150		
	3	T10	90	12	1080	1200	21	100	750	370		
	4	T10	90	5	450	2075	51	250	700			
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<sup>\*</sup> Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm





JOB NO.:

PAIP00405

Document No.: NIM-2-1842-027-DQ-4

PART ID.:

PRODUCTION STATION

Revision No.: A

GCS

SLG-002

Prepared by: Checked by:

PNG VS

REF. DWG NO.: NIM-2-1842-026-DQ-3

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			1411.90					
Weight (Kgs)			875.38					
Total Weight (Kgs	)			•	,			875.380

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A.	B*	C,	D,	E/R*
SLG-002	1	T10	28	12	336	1075	21	150	800	150		
	2	T10	28	10	280	1275	21	150	1000	150		
	3	T10	28	12	336	1200	21	100	750	370		
	4	T10	28	5	140	2075	51	250	700			
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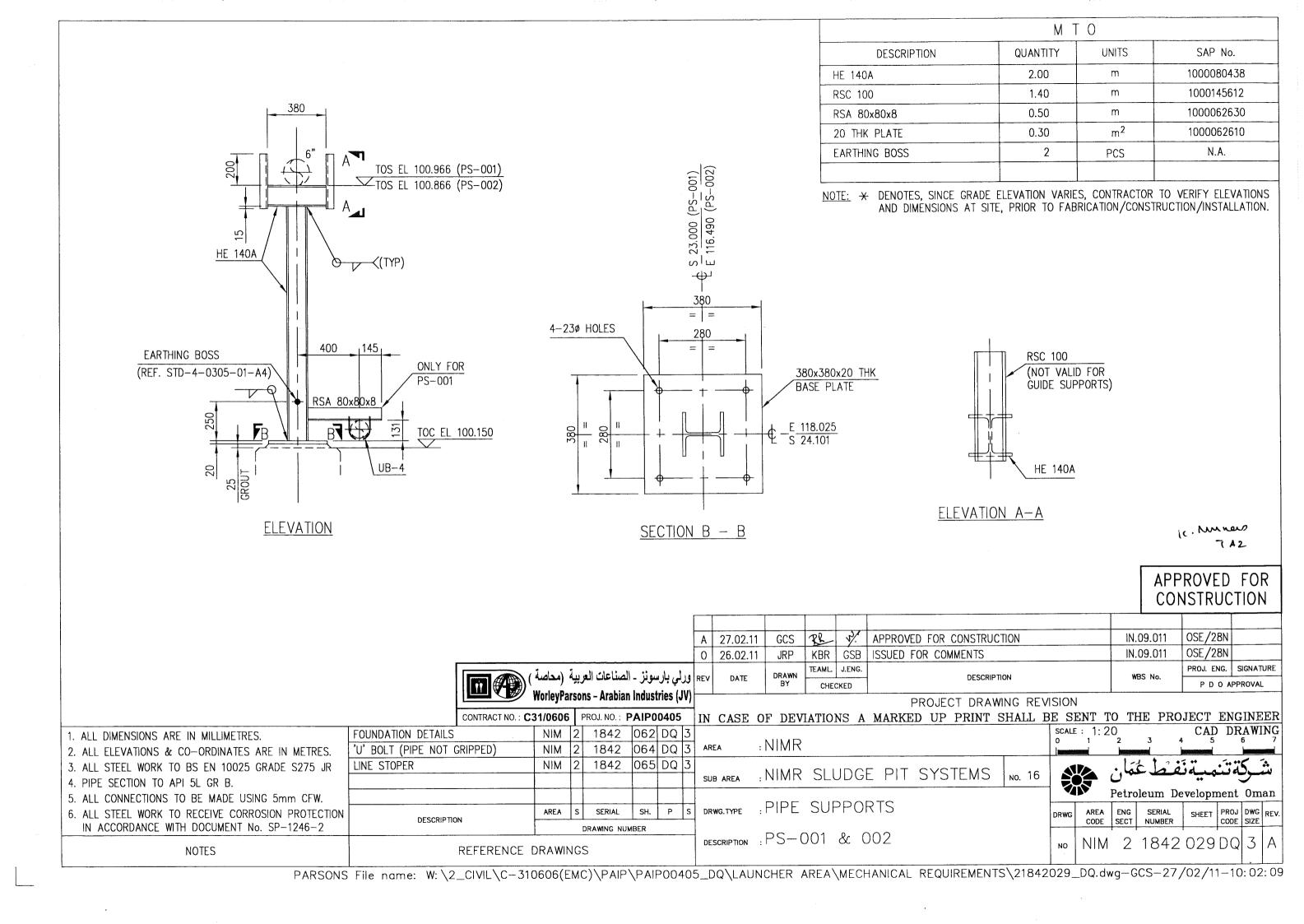
This schedule complies with BS 8666: 2005

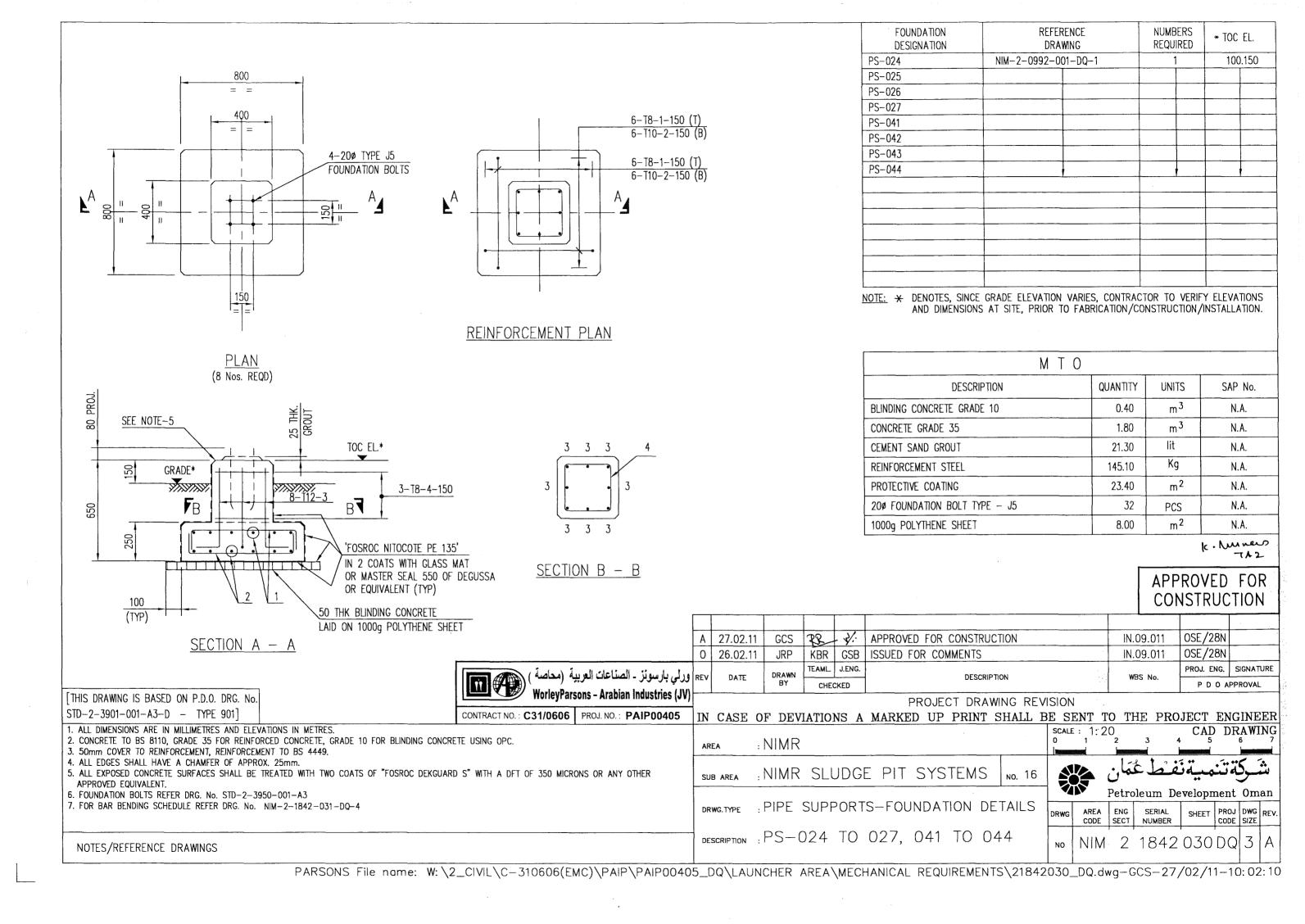
All dimensions are in mm

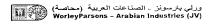
Refer to Bar shape Code drawing

\* Specified in multiples of 5 mm † Specified in multiples of 25 mm

PIPE SUPPORT/	R	EFE	RENCE	DRAWI	NGS			PIPE SUPPORT/		REF	ERENCE DRAWI	NGS		
SLEEPER NUMBER	STEELWORK DETAILS		SLEEPER/FO DETA		LOCATIO	N PLAN	REMARKS	SLEEPER NUMBER	STEELWO DETAILS		SLEEPER/FOUNDATION DETAILS	LOCATION	PLAN	REMARKS
PS-001	NIM-2-1842-029-	DQ-3	NIM-2-1842-	062-DQ-3	NIM-2-0992	-001-DQ-1	LAUNCHER AREA	PS-032	NIM-2-1842-0	51-DQ-3	NIM-2-1842-049-DQ-3	NIM-2-0992-	001-DQ-1	
PS-002	NIM-2-1842-029-	DQ-3	NIM-2-1842-	062-DQ-3				PS-033	NIM-2-1842-0	52-DQ-3	NIM-2-1842-049-DQ-3			
PS-003	NIM-2-1842-033-	DQ-3	_					PS-034	NIM-2-1842-0	53-DQ-3	-			
PS-004	NIM-2-1842-034-	DQ-3	NIM-2-1842-	035-DQ-3				PS-035	NIM-2-1842-0	053-DQ-3				
PS-005	NIM-2-1842-037-	DQ-3						PS-036	NIM-2-1842-0	)54-DQ-3	NIM-2-1842-049-DQ-3			
PS-006	NIM-2-1842-038-	DQ-3						PS-037	NIM-2-1842-0	)54-DQ-3	NIM-2-1842-049-DQ-3			
PS-007	NIM-2-1842-038-	DQ-3						PS-038	NIM-2-1842-0	)55-DQ-3	NIM-2-1842-056-DQ-3			
PS-008	NIM-2-1842-039-	DQ-3	NIM-2-1842-	 040-DQ-3				PS-039	NIM-2-1842-0	)58-DQ-3				
PS-009	NIM-2-1842-038-	DQ-3	NIM-2-1842-	035-DQ-3				PS-040	NIM-2-1842-0	)58-DQ-3				
PS-010				· <u>-</u>				PS-041	NIM-2-1842-0	)59-DQ-3	NIM-2-1842-030-DQ-3			
PS-011								PS-042	NIM-2-1842-0	060-DQ-3				
PS-012						<u> </u>		PS-043	NIM-2-1842-0					
PS-013	NIM-2-1842-039-	DQ-3	NIM-2-1842-	040-D0-3				PS-044	NIM-2-1842-0					
PS-014	NIM-2-1842-038-			· · · · · · · · · · · · · · · · · · ·				PS-045	NIM-2-1842-0		<u> </u>	NIM-3-2142-	001-DQ-1	
PS-015	NIM-2-1842-038-							PS-046			NIM-2-1842-056-DQ-3	NIM-2-0992-		
PS-016	NIM-2-1842-042-				NIM-3-2141				1,11012		2 ,3,2 300 54 0		,	
PS-017	NIM-2-1842-042-				NIM-3-2141									
PS-018	NIM-2-1842-038-				NIM-2-0992			U BOLT DET.	NIM-2-1842-0					
PS-019	141W Z 107Z 030	DQ 3	IVIM Z 107Z	000 DQ 0	1VIIVI Z 0332	001 00 1		PIPE CLAMP/SHOE & LINE STOP DETAILS	1					
PS-020								PIPE GUIDE DET.	NIM-2-1842-0					
PS-021								LINE STOP DET.	NIM-2-1842-0					
PS-022								PIPE SHOE DET.	NIM-2-1842-0					
PS-023								SHOE GUIDE DET.						
PS-024	NIM-2-1842-043-	DQ-3	NIM-2-1842-	030-DQ-3				PIPE CLAMP DET	<del></del>					
PS-025	NIM-2-1842-043-	DQ-3						FIFE CLAMP DET	10101-2-1042-0		•			
PS-026	NIM-2-1842-032-	DQ-3										1		1c. Nuners
PS-027	NIM-2-1842-032-													7/2
PS-028	NIM-2-1842-044-		NIM-2-1842-	045-DQ-3									A	PPROVED FOR
PS-029	NIM-2-1842-047-		_		NIM-3-2140	<u>'</u> )-001-D0-1	-						C	<b>ONSTRUCTION</b>
PS-030	NIM-2-1842-048-		NIM-2-1842-	049_DO_3	NIM-2-0992									
PS-031	NIM-2-1842-051-				NIM-2-0992			A 27.02.11	GCS RR	√³/; APPR	ROVED FOR CONSTRUCTION		IN.09.01	I OSE/28N
10 001	14W 2 1012 001	<b>DQ</b> 0	141141 2 1032	013 DQ 3	141141 2 0332	2 001 001		0 26.02.11			ED FOR COMMENTS		IN.09.01	OSE/28N
						1 ( i	ونز - الصناعات العربية (محاد	REV DATE	DRAWN TEAML J		DESCRIPTION		WBS No.	PROJ. ENG. SIGNATU
						Wo	rleyParsons - Arabian Indu	stries (JV)	CILON		PROJECT DRAWING I	REVISION	1	1
					CONT	RACT NO.: C31/	0606 PROJ. NO. : PAIP	00405 IN CASE O	F DEVIATIONS	S A MAR	RKED UP PRINT SHAL	L BE SENT		
								AREA :	NIMR			SCALE: NT 0 1	S 2 3	CAD DRAWIN
											IT OVOTELLO		.1-21-	ئىركەتنمىيەنف
								SUB AREA :	NIMR SLU	UGE P	IT SYSTEMS NO.	16		•
CONTRACTOR SE	HALL REFER PIPING F	PIAN P	RIOR TO				AREA S SERIAL SH.	P S DRWG.TYPE :	PIPE SUPI	PORTS	(LAUNCHER)	1.554	Petroleum ENG SERIA	Development Oma
	ISTALLATION OF PIPE		1		DESCRIPTION		DRAWING NUMBER				,	DRWG AREA CODE	SECT NUMB	
	NOTES				RFF	ERENCE DR		DESCRIPTION :	INDEX SHI	EETS		NO NIV	1 2 184	12 028 DQ 3







JOB NO.:

PAIP00405

Document No.: NIM-2-1842-031-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A Prepared by:

JRP

PS-024 TO 027 & 041 TO 044

Checked by:

PNG &

REF. DWG NO.: NIM-2-1842-030-DQ-3

Date:

27.02.11

Total MTO for Rebars.

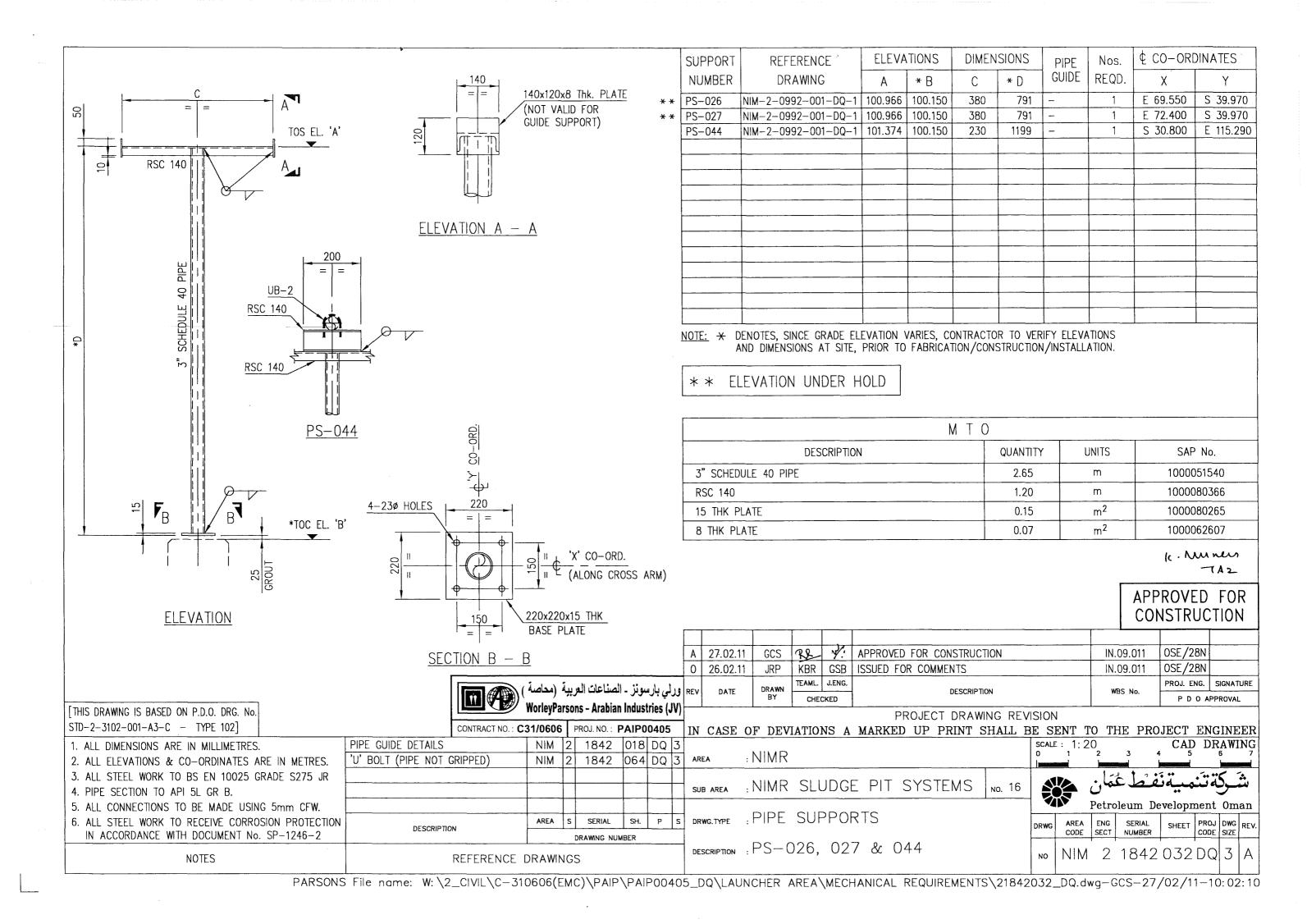
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		121.80	88.80	46.40				
Weight (Kgs)		48.72	55.06	41.30				
Total Weight (Kgs)	)							145.080

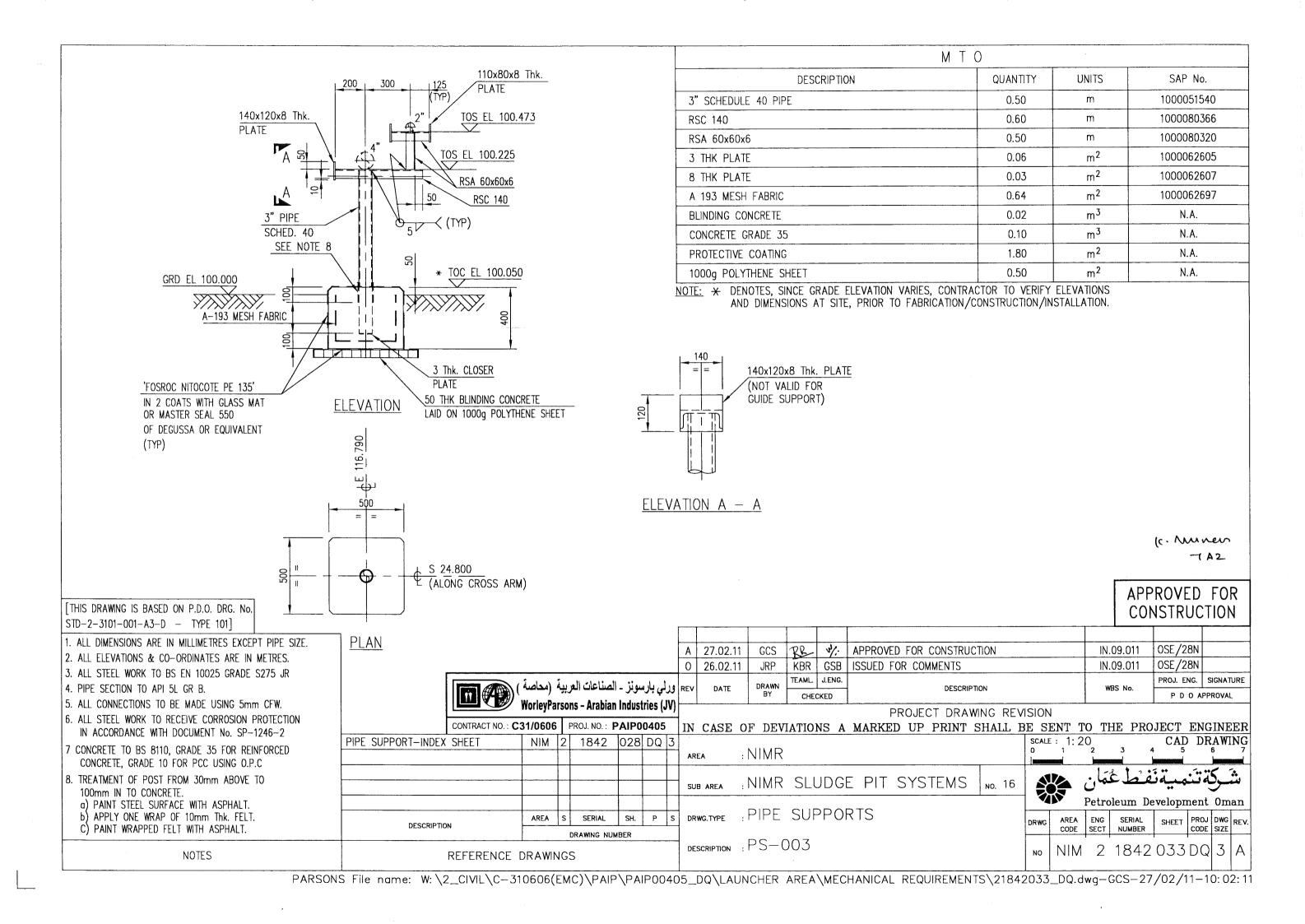
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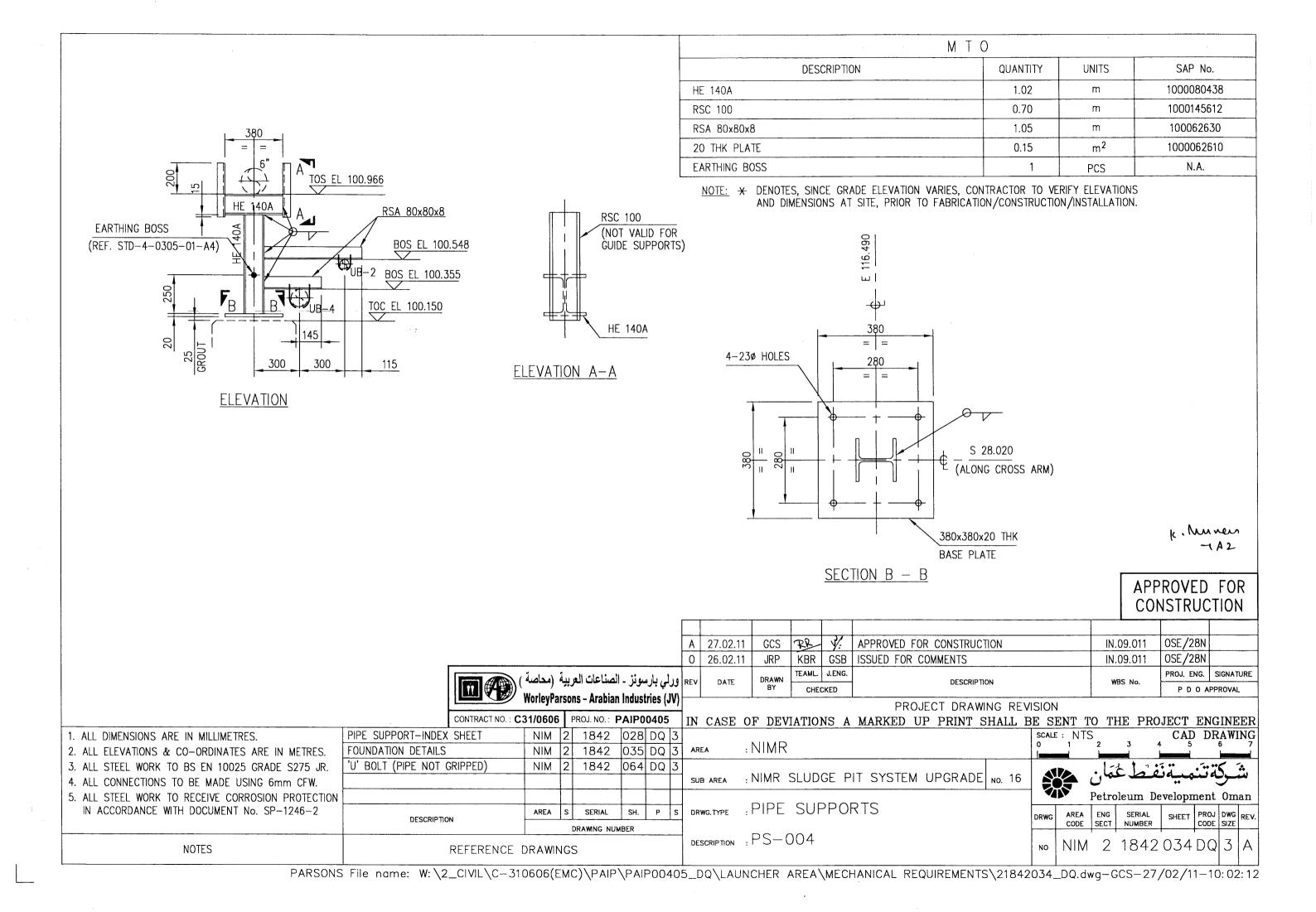
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	$\mathbf{D}^{\star}$	E/R*
PS- 024 TO 027	1	Т8	8	12	96	925	21	125	700	125		
& 041 TO 044	2	T10	8	12	96	925	21	125	700	125		
	3	T12	8	8	64	725	11	200	530		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	4	Т8	8	3	24	1375	51	300	300			
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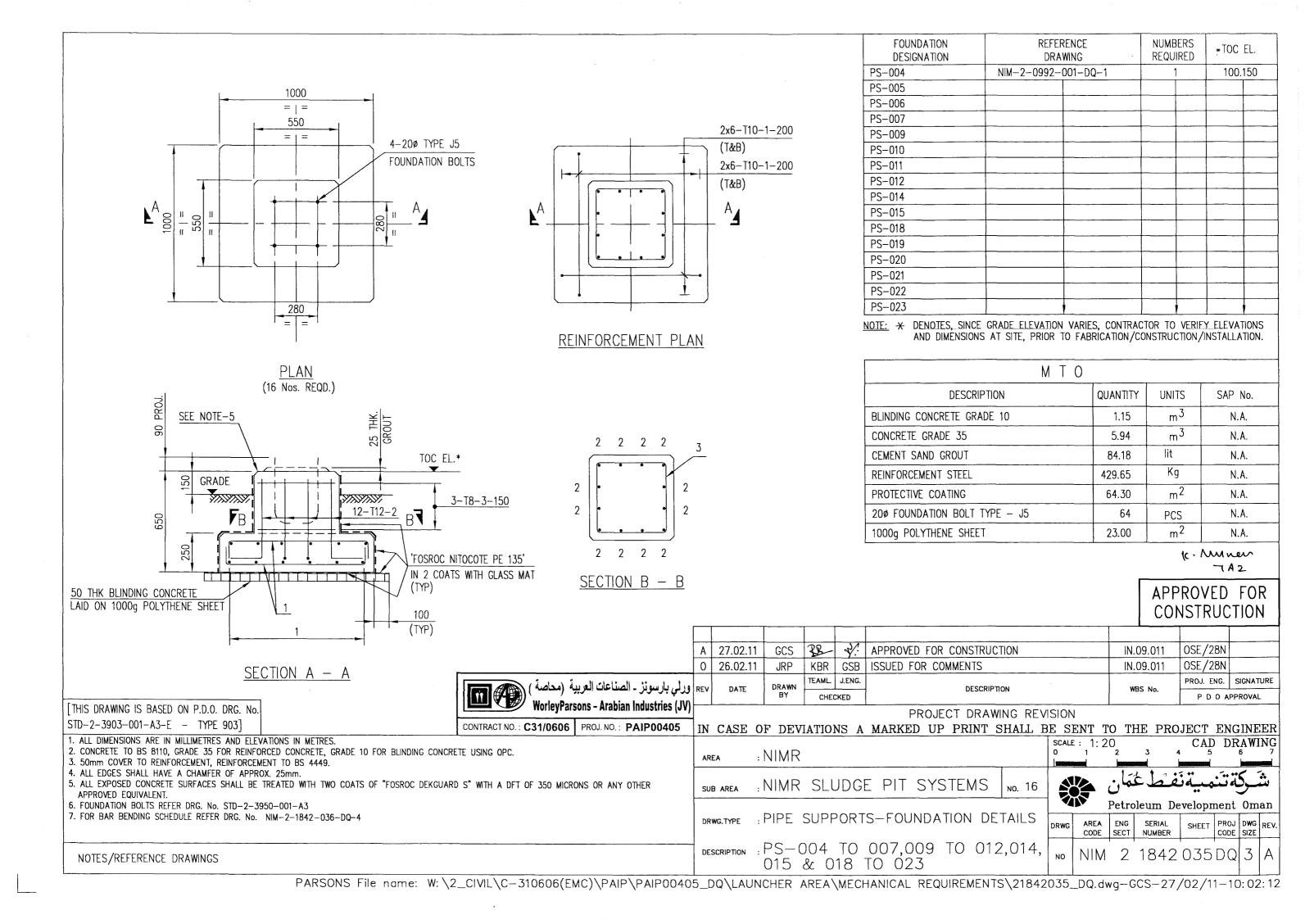
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm











JOB NO.:

PAIP00405

REF. DWG NO.: NIM-2-1842-035-DQ-3

Document No.: NIM-2-1842-036-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A

PS-004 TO 007,009 TO 012,014, 015 & 018 TO 023

Prepared by: Checked by:

JRP PNG PS

Date:

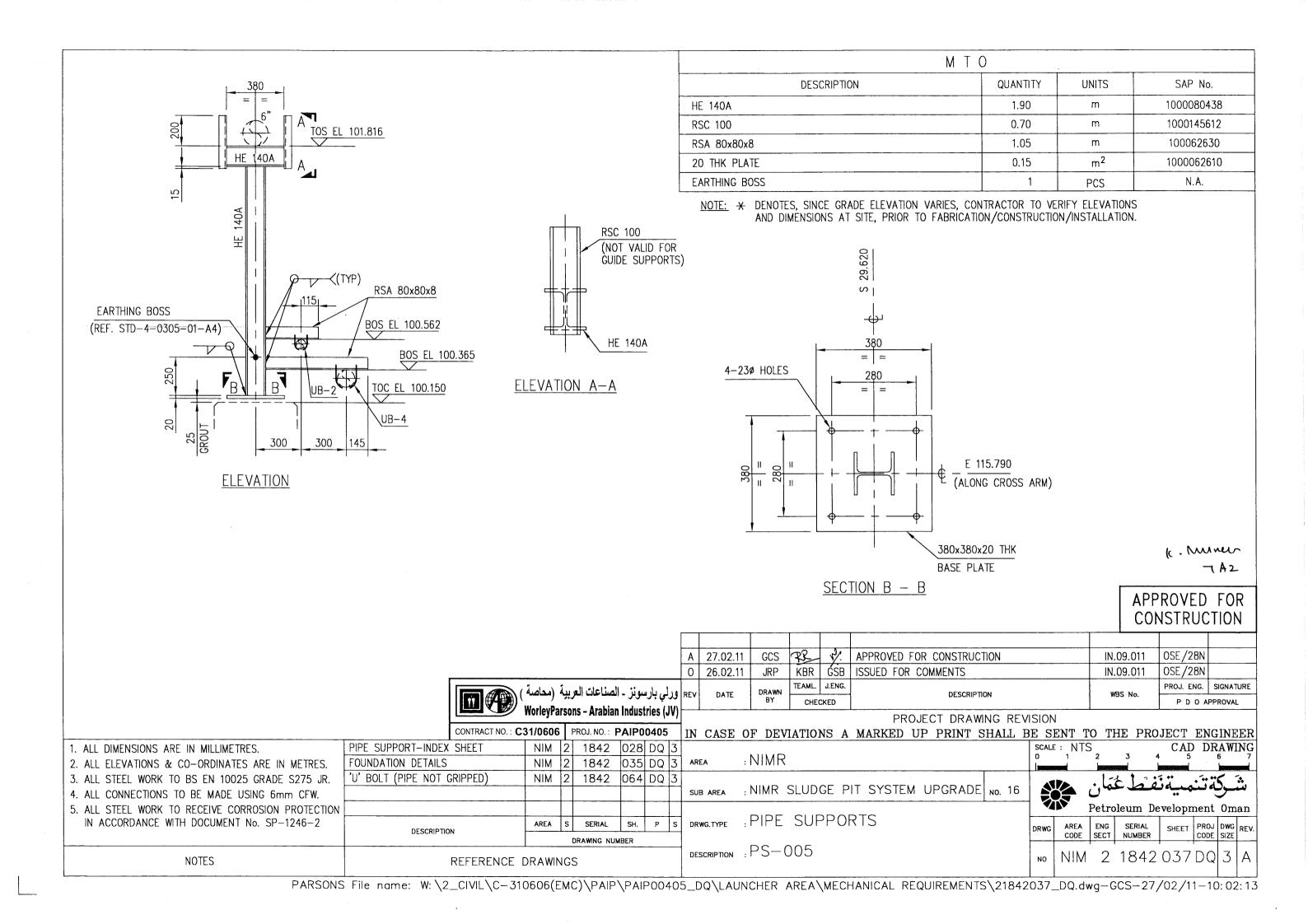
27.02.11

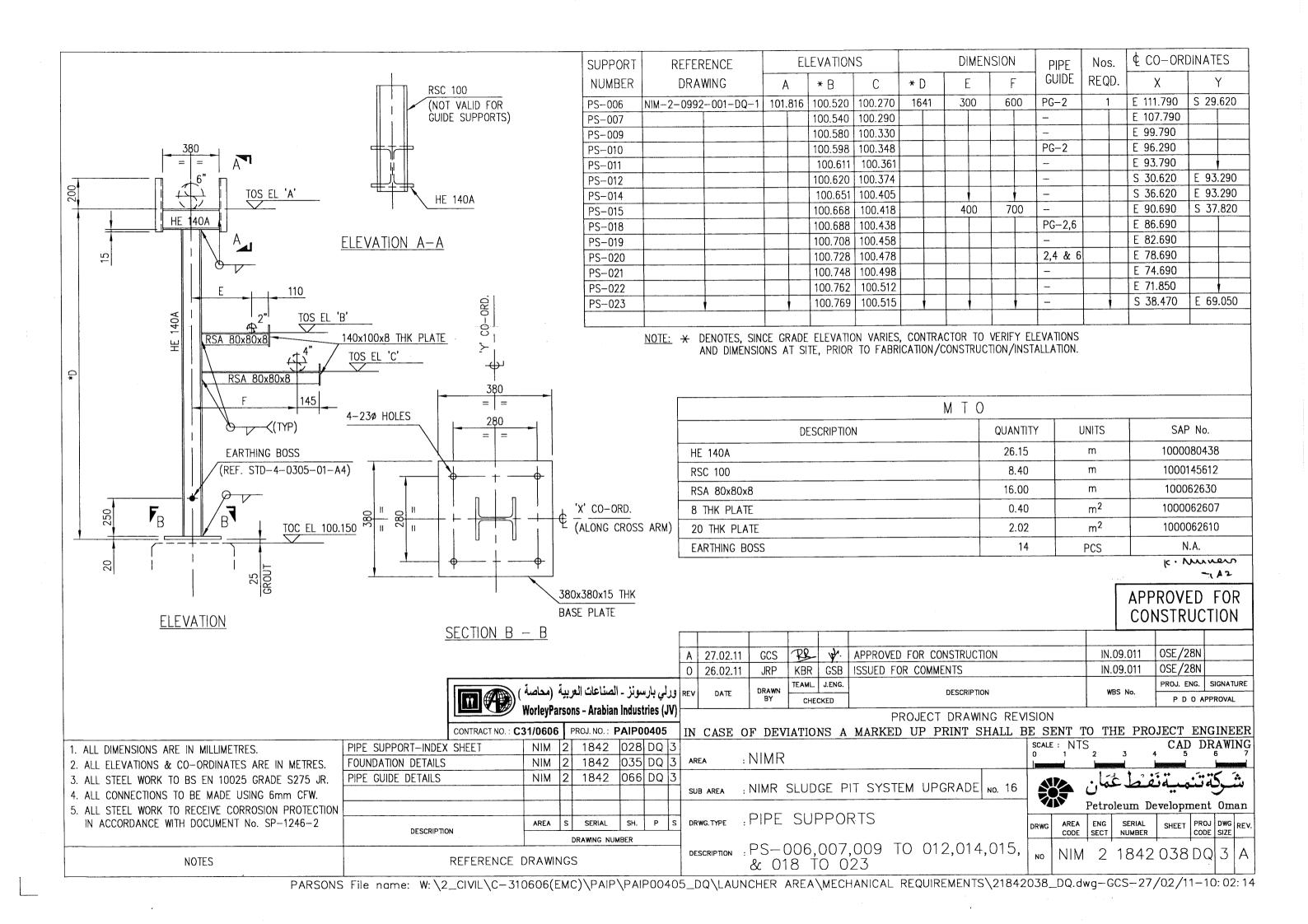
Total MTO for Rebars.

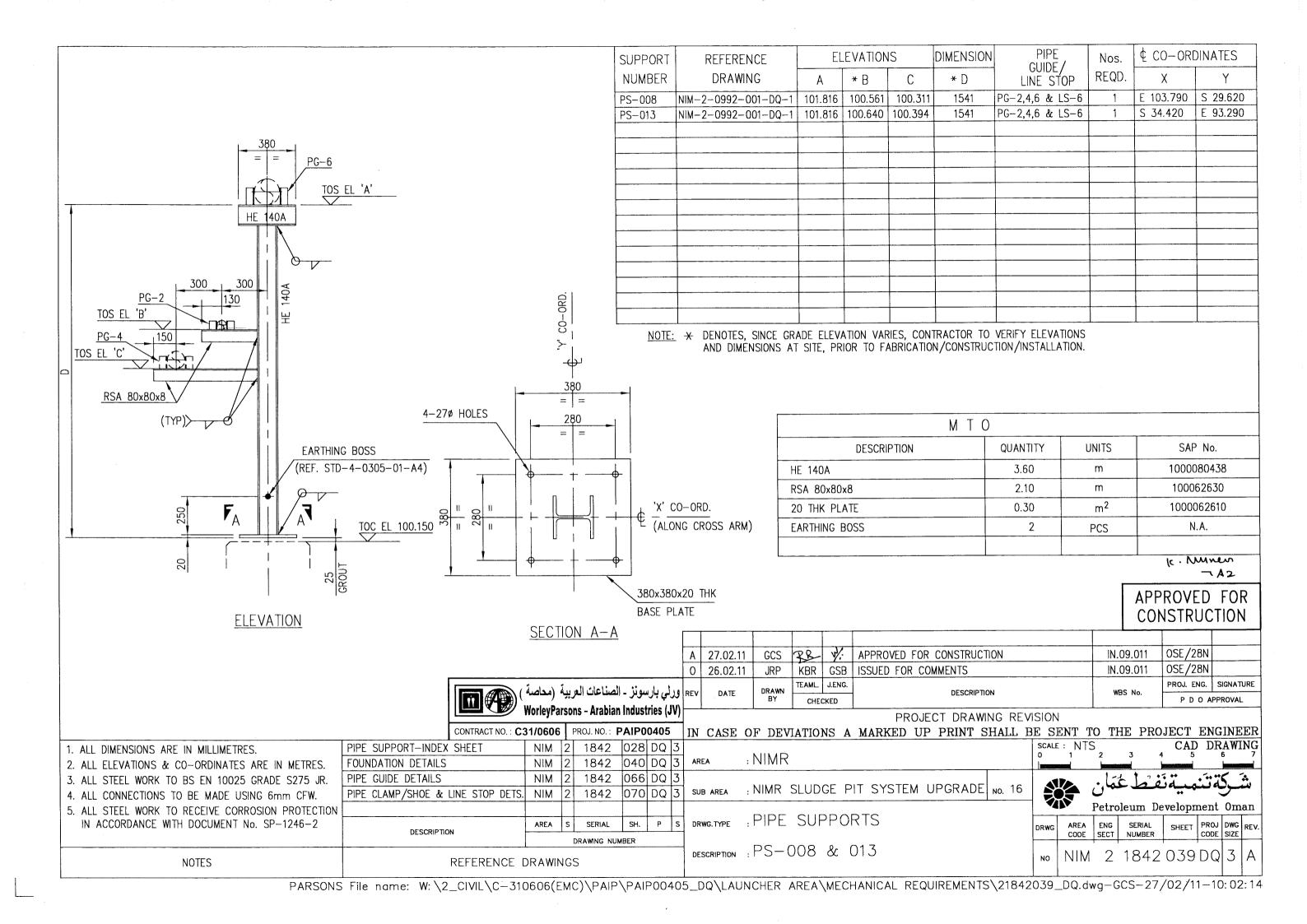
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		94.80	432.00	139.20				
Weight (Kgs)		37.92	267.84	123.89				
Total Weight (Kgs	)							429.650

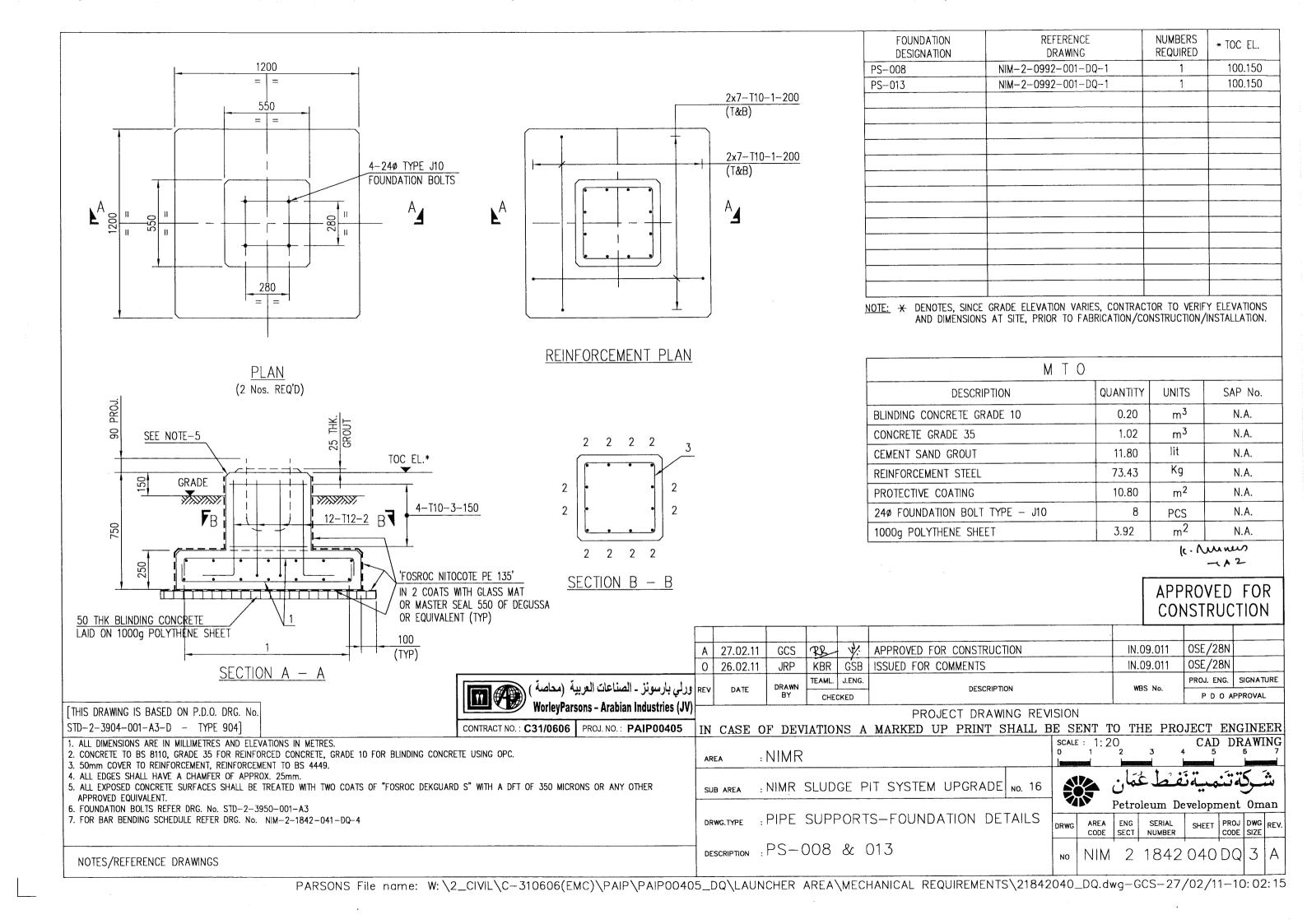
1c. Munus

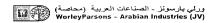
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B,	C,	D,	E/R*
PS-004 TO 007,009	1	T10	16	24	384	1125	21	125	900	125		
TO 012,014,015	2	T12	16	12	192	725	11	200	530			
& 018 TO 023	3	Т8	16	3	48	1975	51	450	450			
				-								











JOB NO.:

PAIP00405

Document No.: NIM-2-1842-041-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A

PS-008 & 013

Prepared by: Checked by:

JRP PNG PR

Date:

27.02.11

REF. DWG NO.: NIM-2-1842-040-DQ-3

Total MTO for Rebars

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			90.00	19.80				
Weight (Kgs)			55.80	17.63				
Total Weight (Kgs)	1							73.430

(c. numers

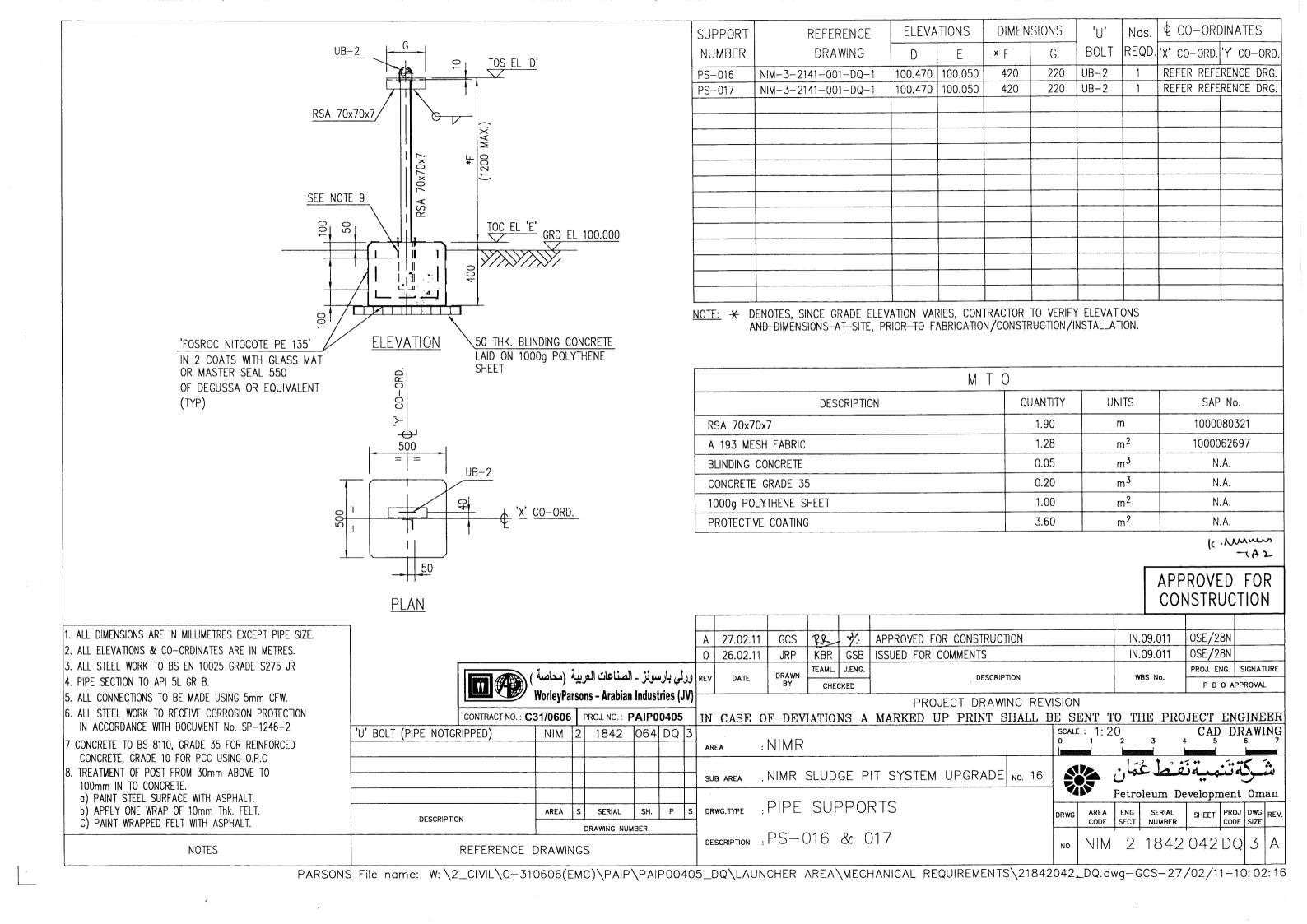
Type Length of No. of Bar Total Nos. Shape C,  $\mathbf{A}^{\star}$  $\mathbf{D}^{\star}$ each Bar  $\mathbf{B}^{\star}$  $E/R^*$ Designation & Bars in Reqd Mark Nos. code each Size † PS-008 & 013 1 T10 2 28 56 1325 21 125 1100 125 2 T12 2 12 24 825 11 200 630 3 T10 2 4 1975 51 450 450

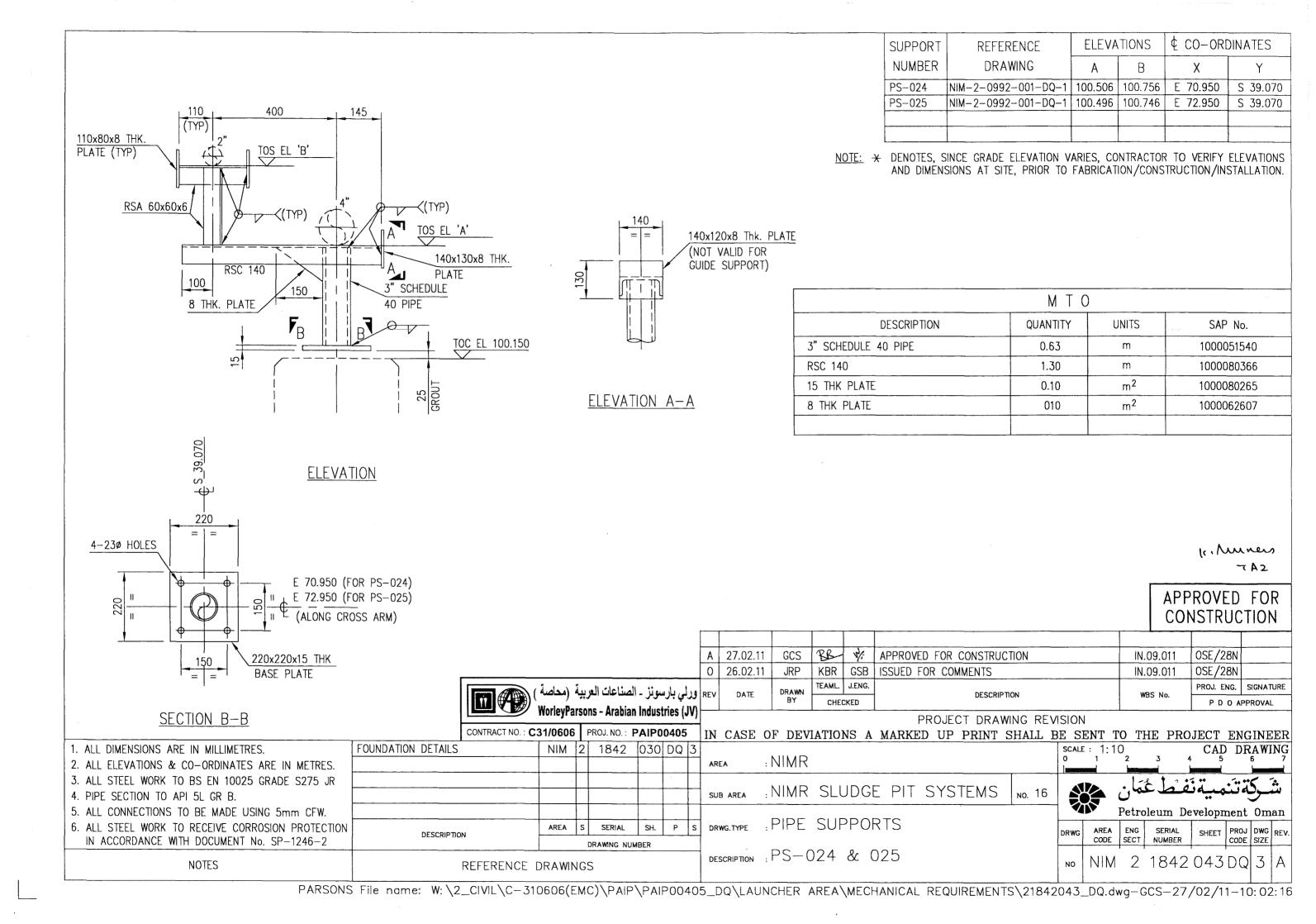
This schedule complies with BS 8666: 2005

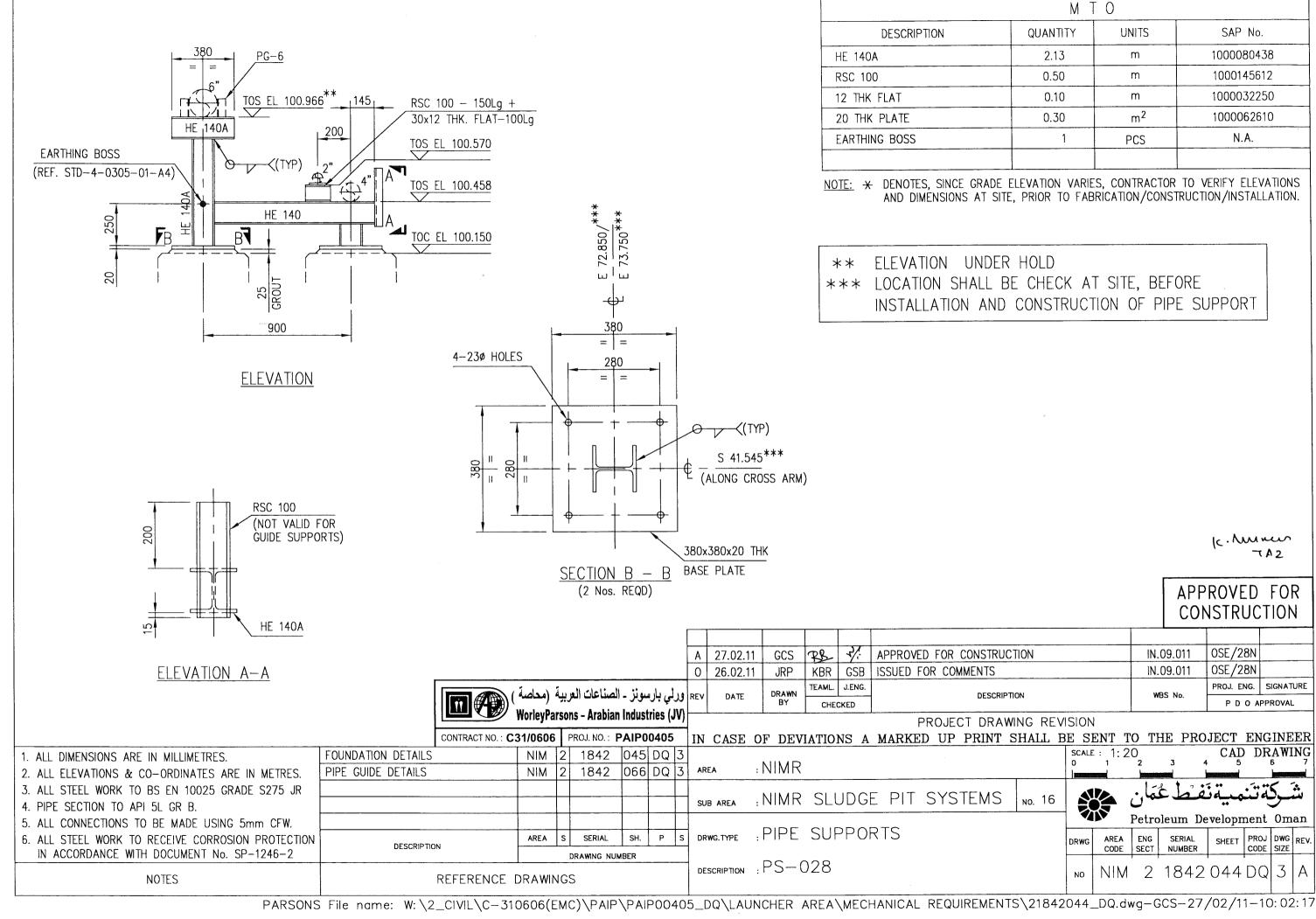
All dimensions are in mm

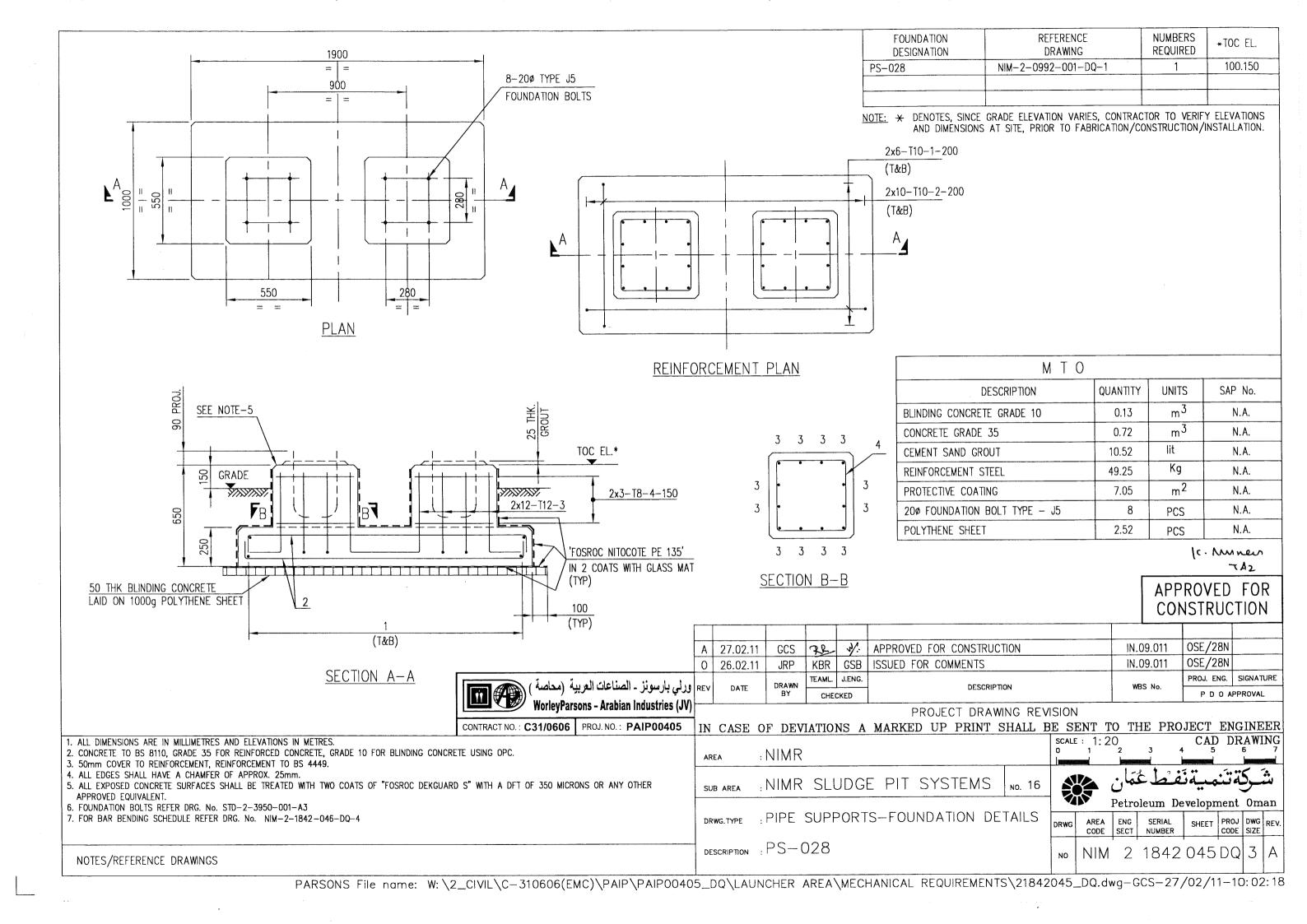
Refer to Bar shape Code drawing

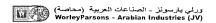
\* Specified in multiples of 5 mm † Specified in multiples of 25 mm











JOB NO.:

PAIP00405

Document No.: NIM-2-1842-046-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A Prepared by:

JRP

PS-028

Checked by:

PNG 3.8

REF. DWG NO.: NIM-2-1842-045-DQ-3

Date:

27.02.11

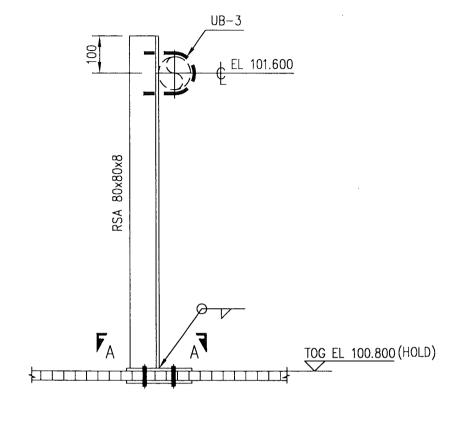
Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)	_	11.85	46.80	17.40				
Weight (Kgs)		4.74	29.02	15.49				
Total Weight (Kgs)	)							49.250

PS-028	Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D,	E/R*
3 T12 1 24 24 725 11 200 530 4 T8 1 6 6 1975 51 450 450	PS-028	1	T10	1	12	12	2025	21	125	1800	125		
4 T8 1 6 6 1975 51 450 450		2	T10	1	20	20	1125	21	125	900	125		
		3	T12	1	24	24	725	11	200	530			
		4	Т8	1	6	6	1975	51	450	450			
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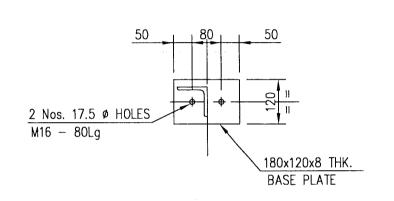
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

	МТО								
DESCRIPTION	QUANTITY	UNITS	SAP No.						
RSA 80x80x8	1.80	m	1000062630						
8 THK PLATE	0.10	m <sup>2</sup>	1000062607						
M16 DIA BOLTS	4	Nos.	1000062607						



**ELEVATION** 

(2 Nos. REQD)



SECTION A-A

(2x2 Nos. REQ'D)

GCS

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APPROVED FOR CONSTRUCTION

10. Muneus 7A2

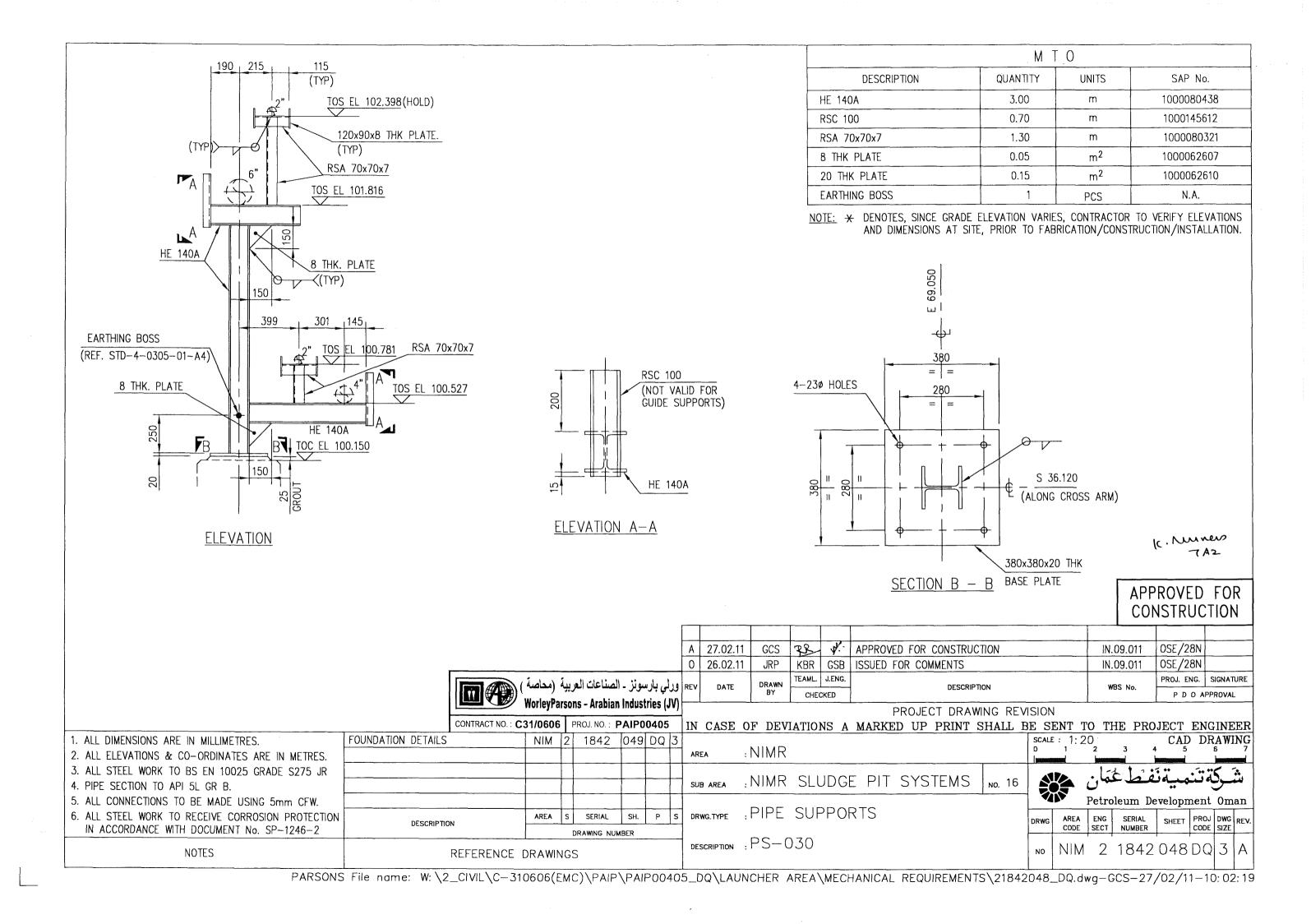
# APPROVED FOR CONSTRUCTION

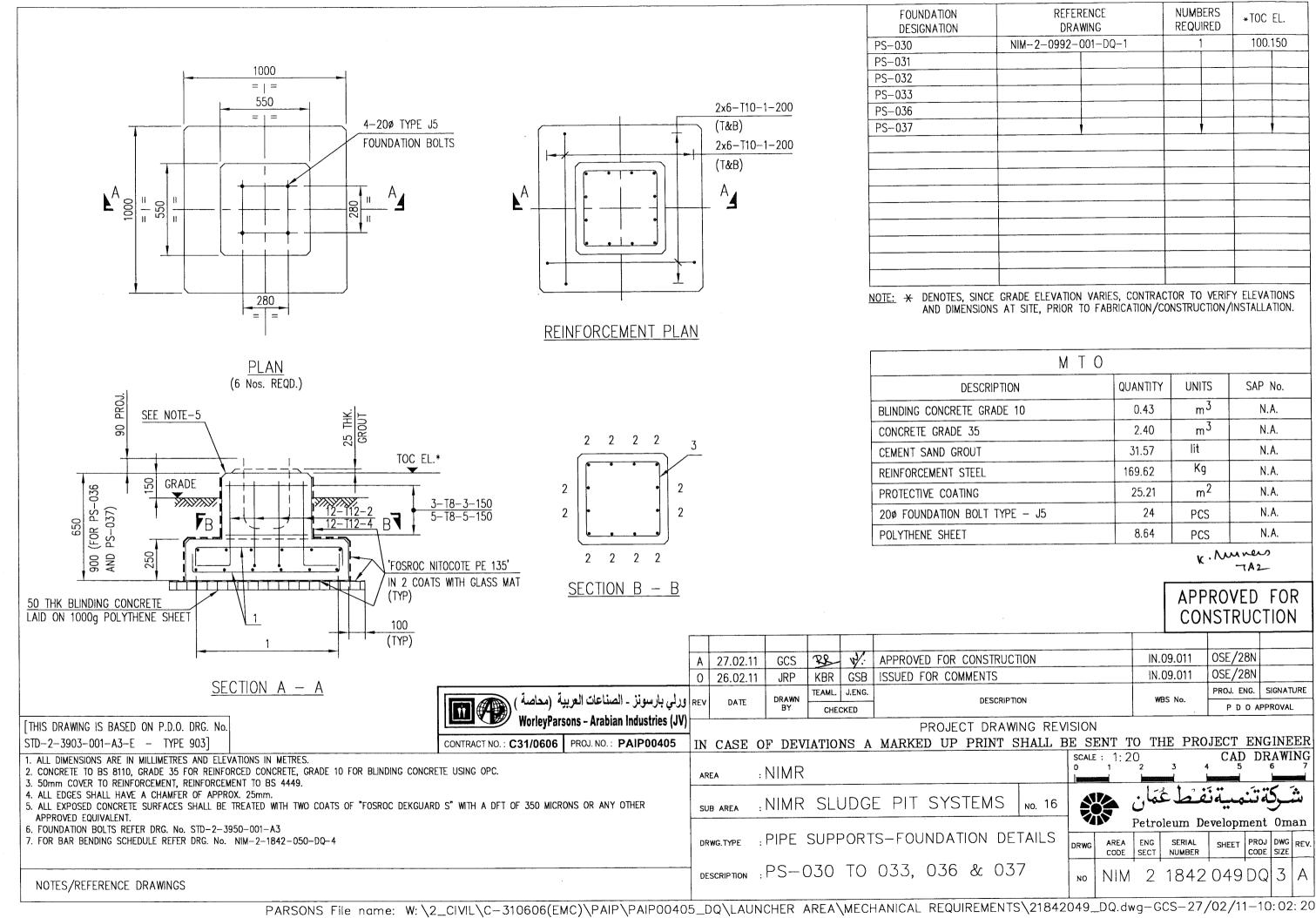
OSE/28N

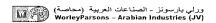
IN.09.011

JRP OSE/28N 0 26.02.11 KBR GSB ISSUED FOR COMMENTS IN.09.011 TEAML. J.ENG. PROJ. ENG. SIGNATURE DRAWN BY DATE DESCRIPTION WBS No. P D O APPROVAL CHECKED WorleyParsons - Arabian Industries (JV) PROJECT DRAWING REVISION CONTRACT NO.: **C31/0606** PROJ. NO.: **PAIP00405** IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER 2140 | 001 DQ | 1 CAD DRAWING PIPING G.A (PS-029) NIM 1. ALL DIMENSIONS ARE IN MILLIMETRES. :NIMR PIPING G.A (PS-045) 2142 001 DQ 1 AREA NIM 2. ALL ELEVATIONS & CO-ORDINATES ARE IN METRES. 'U' BOLT (PIPE NOT GRIPPED) NIM 1842 064 DQ 3 3. ALL STEEL WORK TO BS EN 10025 GRADE S275 JR :NIMR SLUDGE PIT SYSTEMS <sub>NO.</sub> 16 4. PIPE SECTION TO API 5L GR B. Petroleum Development Oman 5. ALL CONNECTIONS TO BE MADE USING 5mm CFW. :PIPE SUPPORTS SERIAL SH. SHEET PROJ DWG CODE SIZE 6. ALL STEEL WORK TO RECEIVE CORROSION PROTECTION DESCRIPTION IN ACCORDANCE WITH DOCUMENT No. SP-1246-2 DRAWING NUMBER DESCRIPTION : PS-029 & 045 NIM 2 1842 047 DQ 3 A NOTES REFERENCE DRAWINGS PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\MECHANICAL REQUIREMENTS\21842047\_DQ.dwg-GCS-27/02/11-10:02:19

A 27.02.11







JOB NO.:

PAIP00405

Document No.: NIM-2-1842-050-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.:

PS-030 TO 033, 036 & 037

Prepared by: Checked by:

JRP PNG 28

Date:

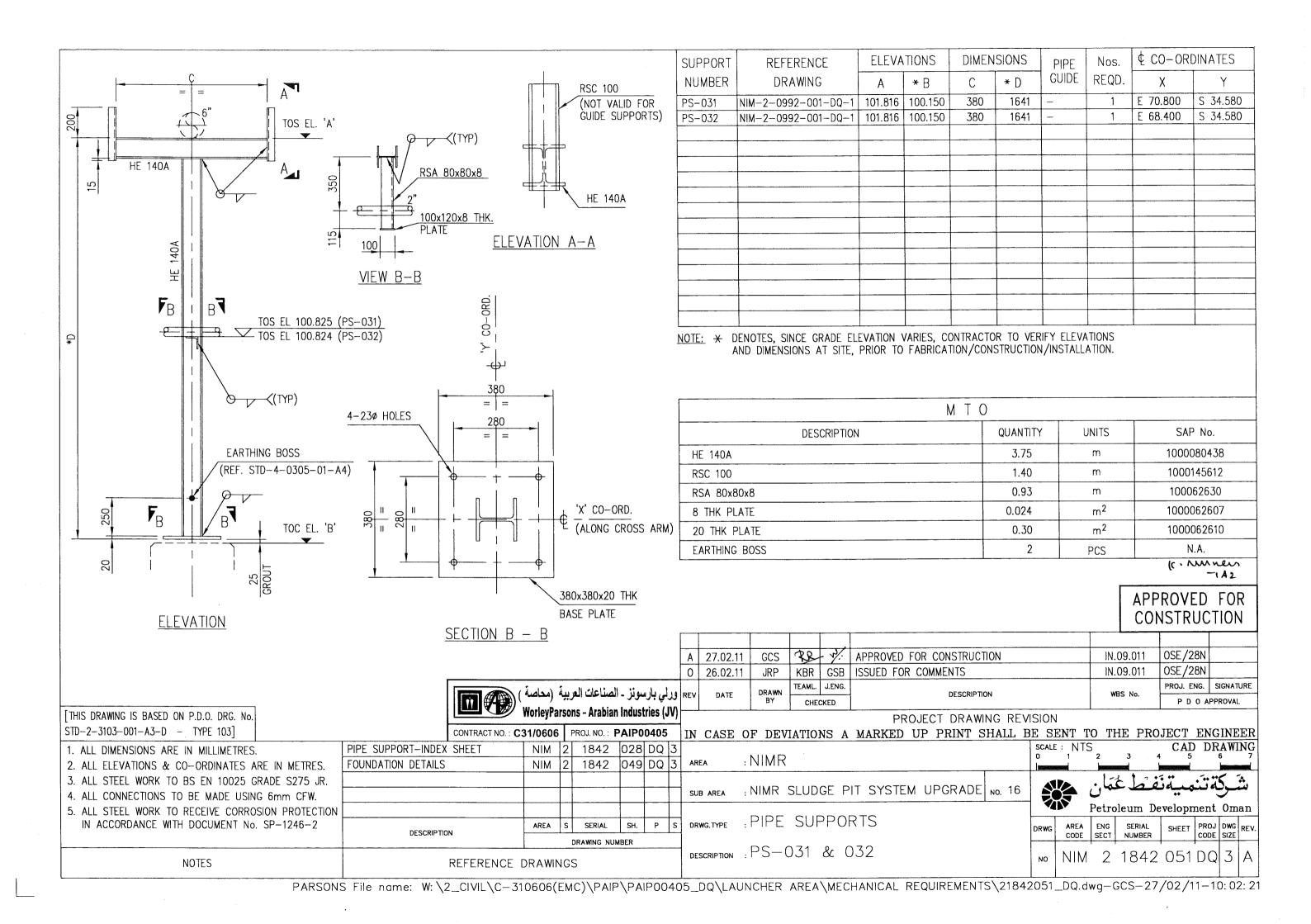
REF. DWG NO.: NIM-2-1842-049-DQ-3

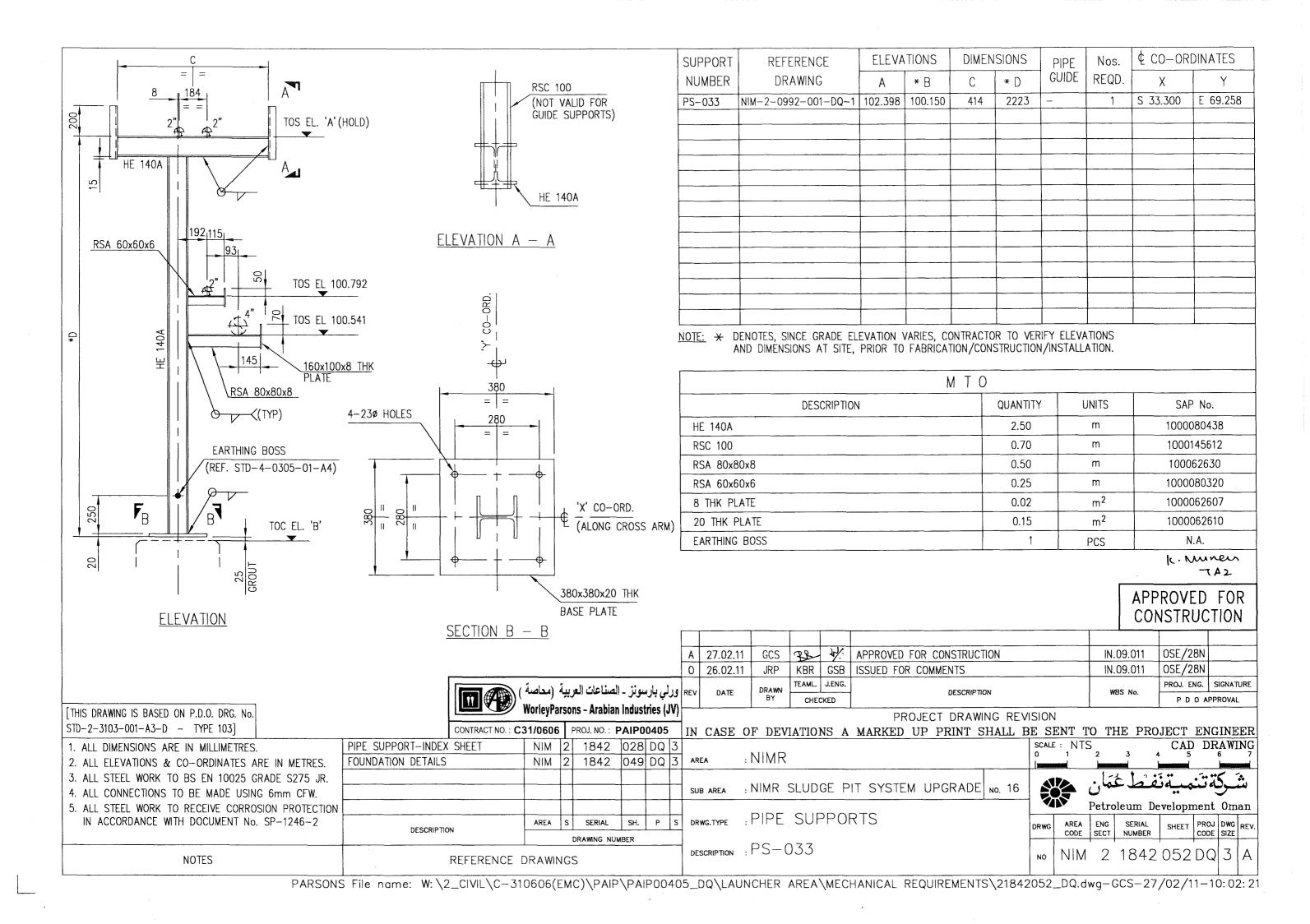
27.02.11

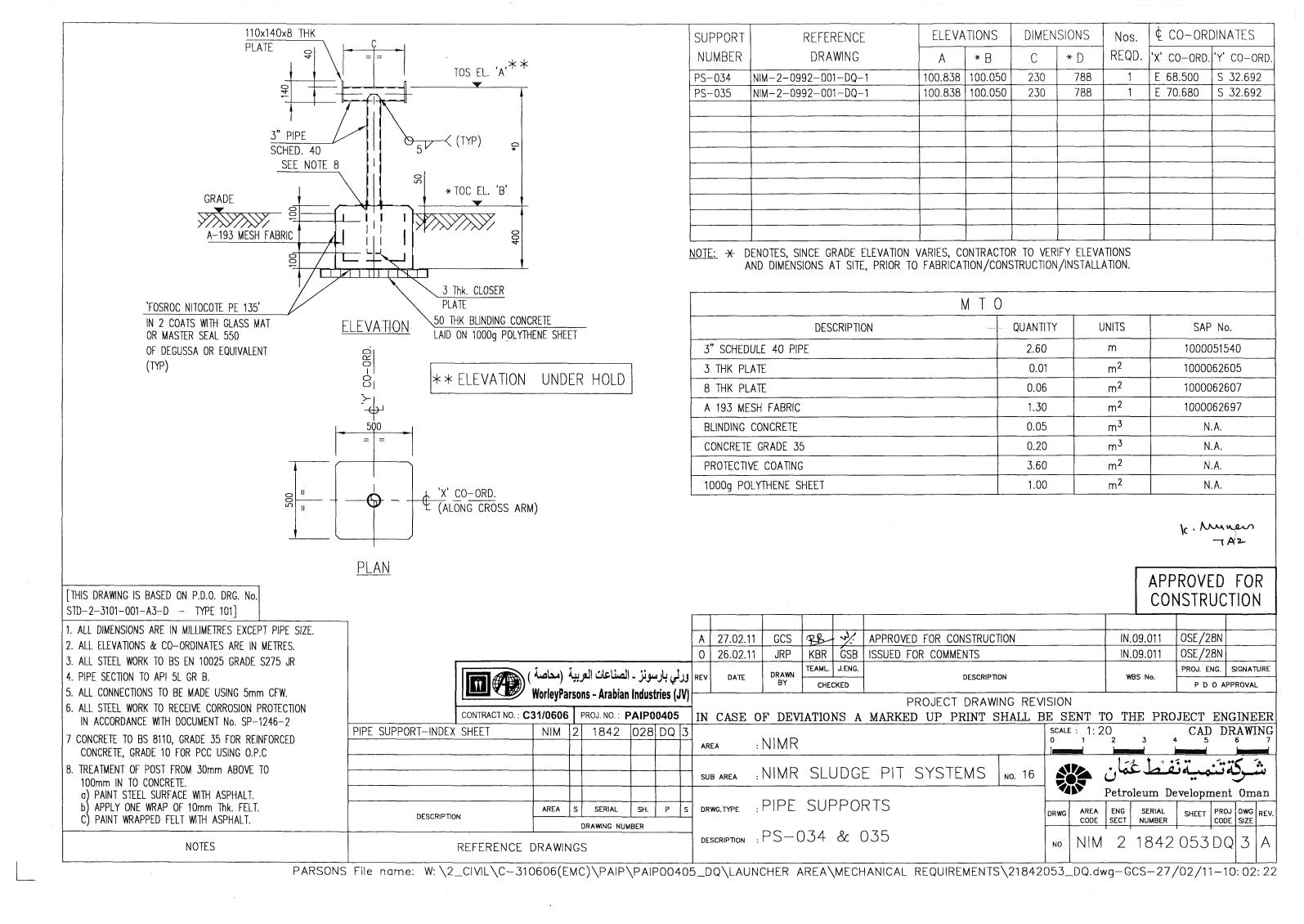
Total MTO for Rebars.

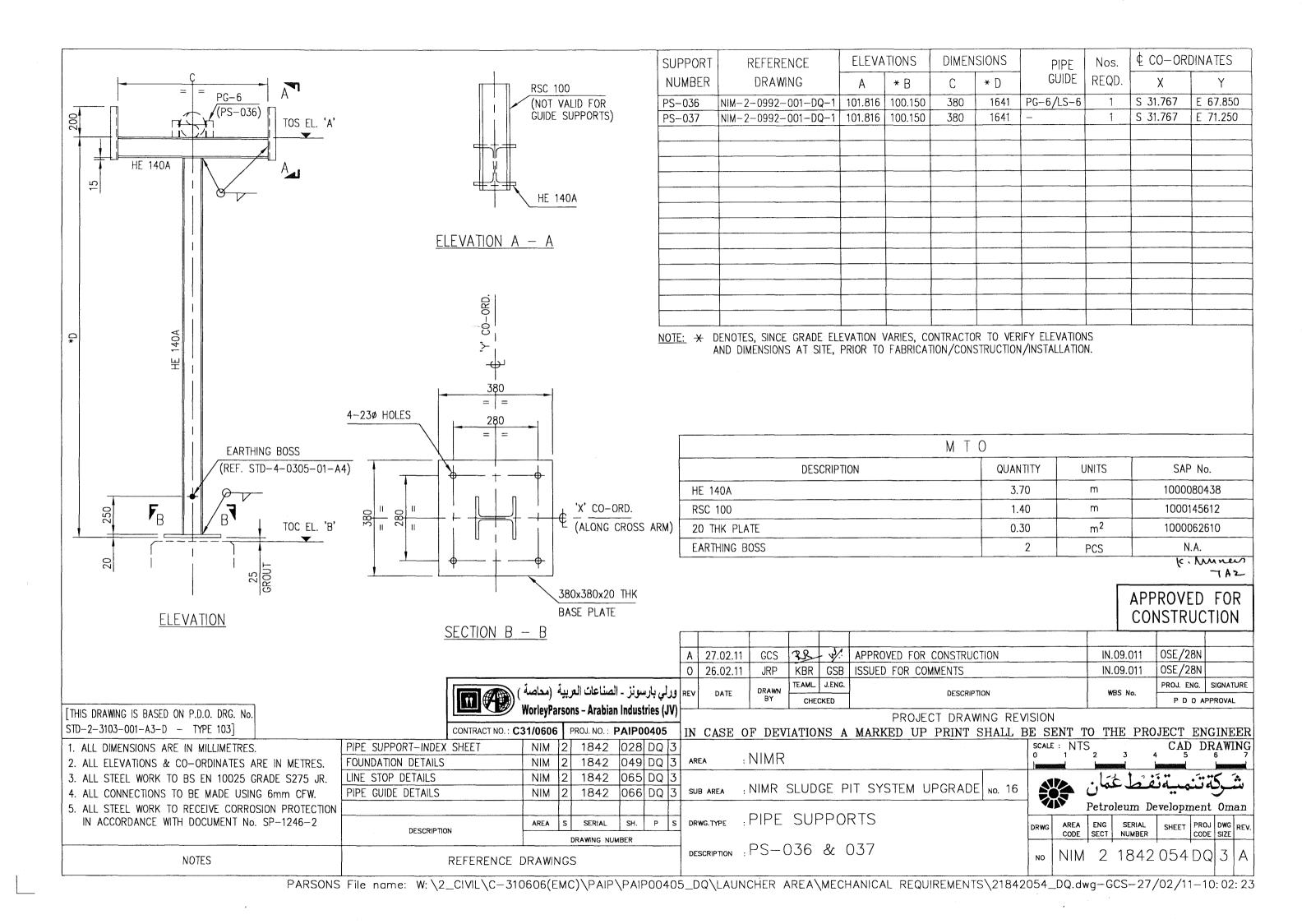
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		43.45	162.00	58.20				
Weight (Kgs)		17.38	100.44	51.80				
Total Weight (Kgs)	)							169.620

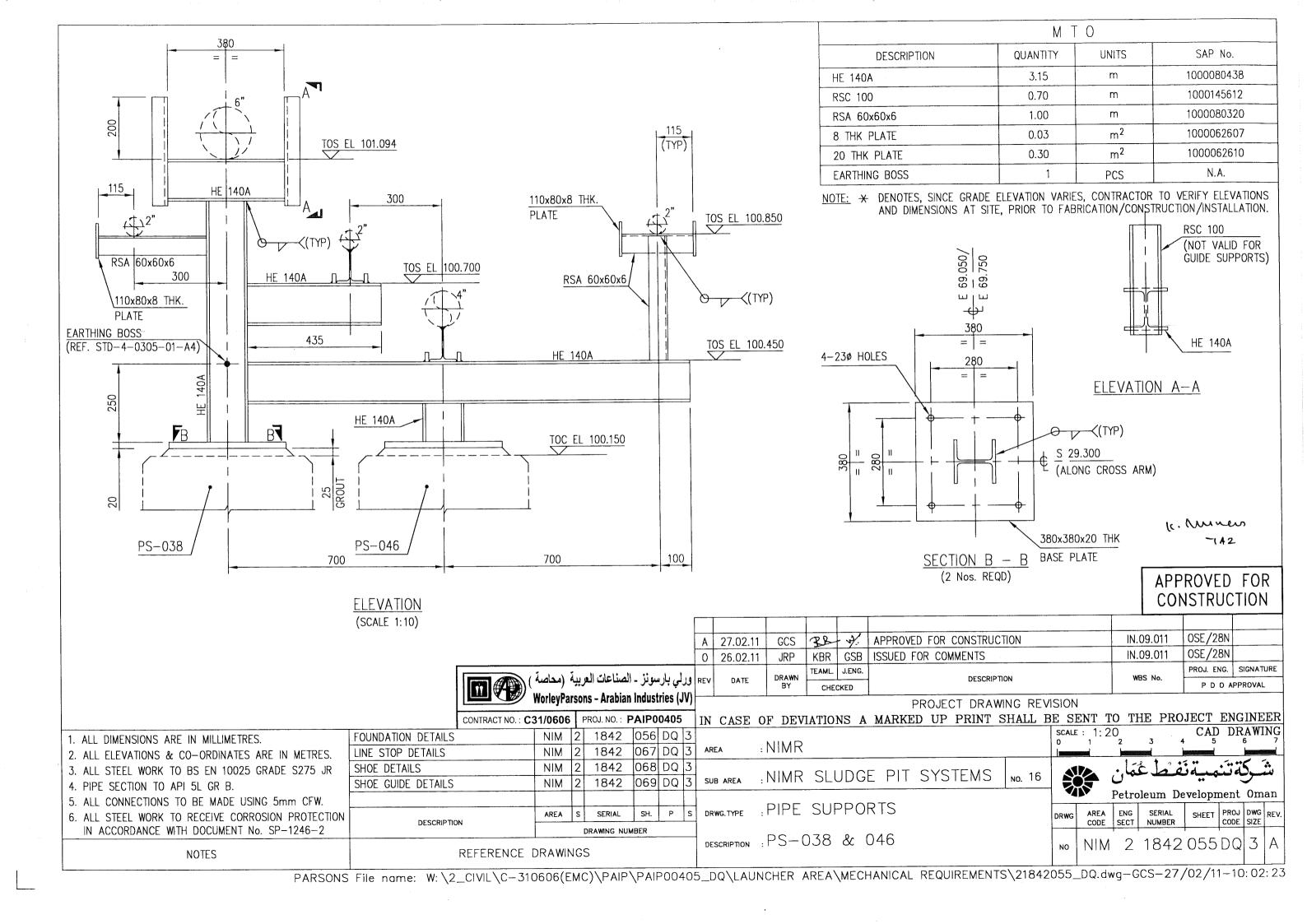
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C*	D,	E/R*
PS-030 TO 033,	1	T10	6	24	144	1125	21	125	900	125		
	2	T12	4	12	48	725	11	200	530			
	3	Т8	4	3	12	1975	51	450	450			
036 & 037	4	T12	2	12	24	975	11	200	780			
	5	Т8	2	5	10	1975	51	450	450			
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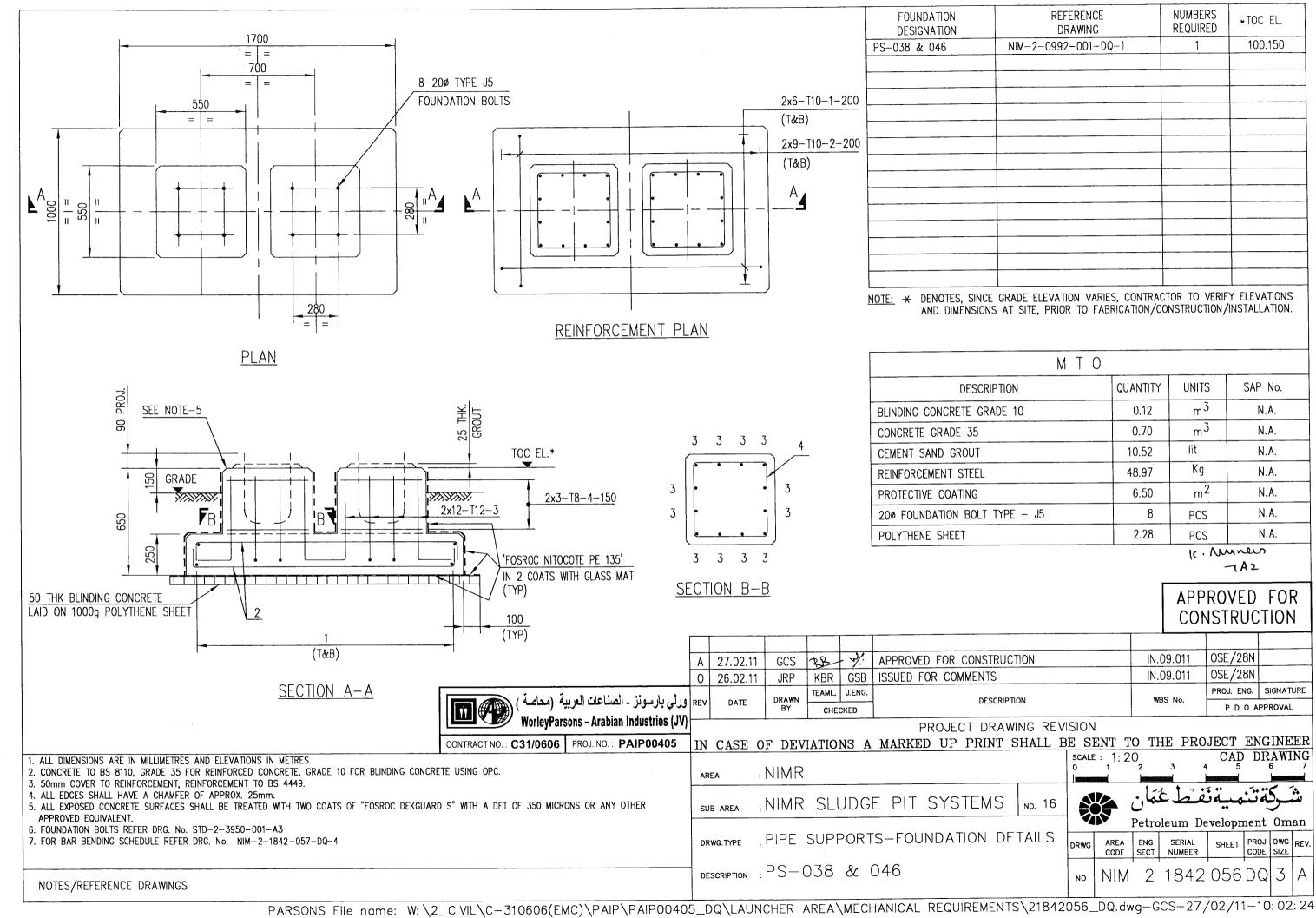


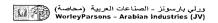












JOB NO.:

PAIP00405

Document No.: NIM-2-1842-057-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.:

Α

PS-038 & 046

Prepared by: Checked by: JRP

48.970

PNG

REF. DWG NO.: NIM-2-1842-056-DQ-3

Date:

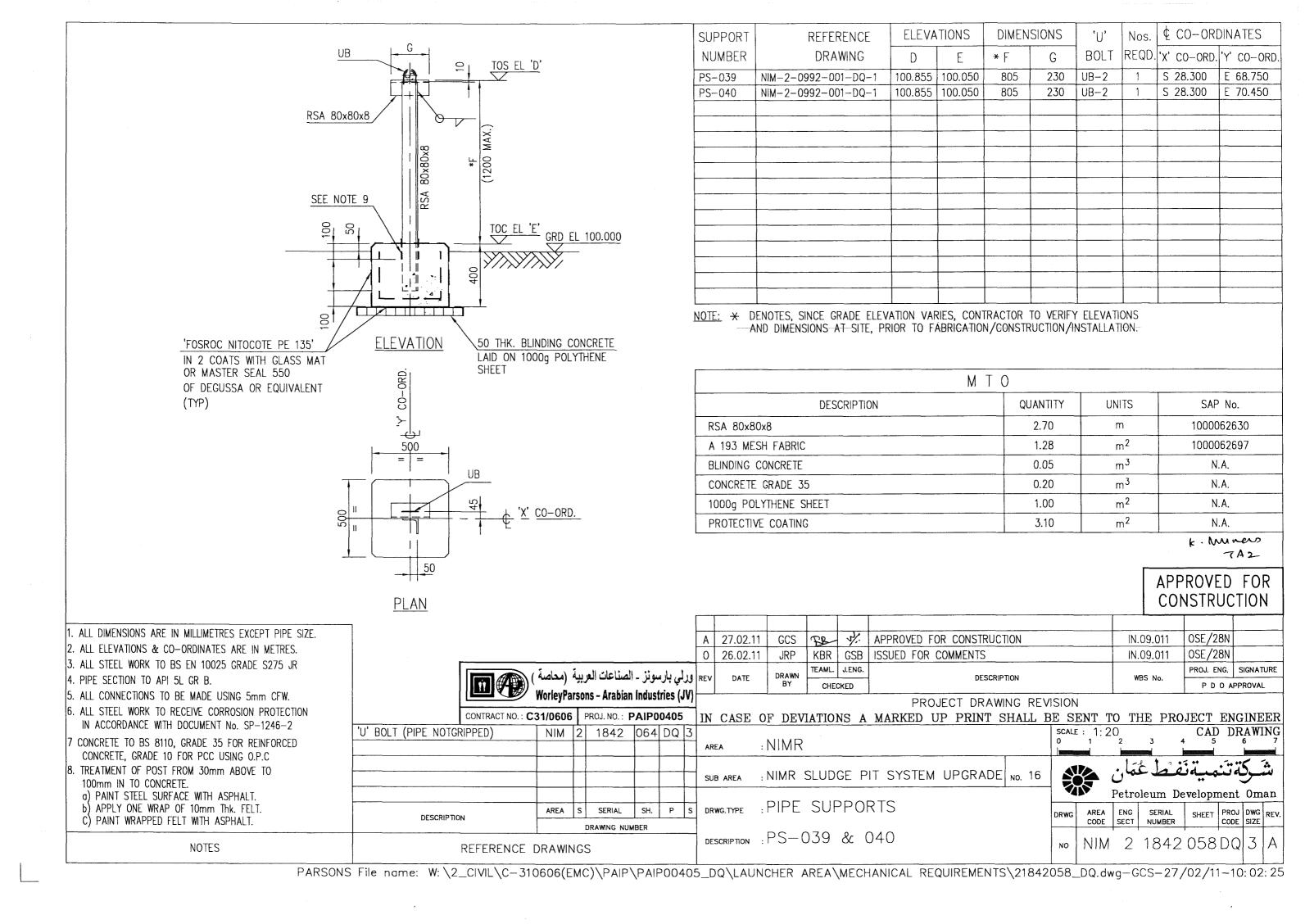
27.02.11

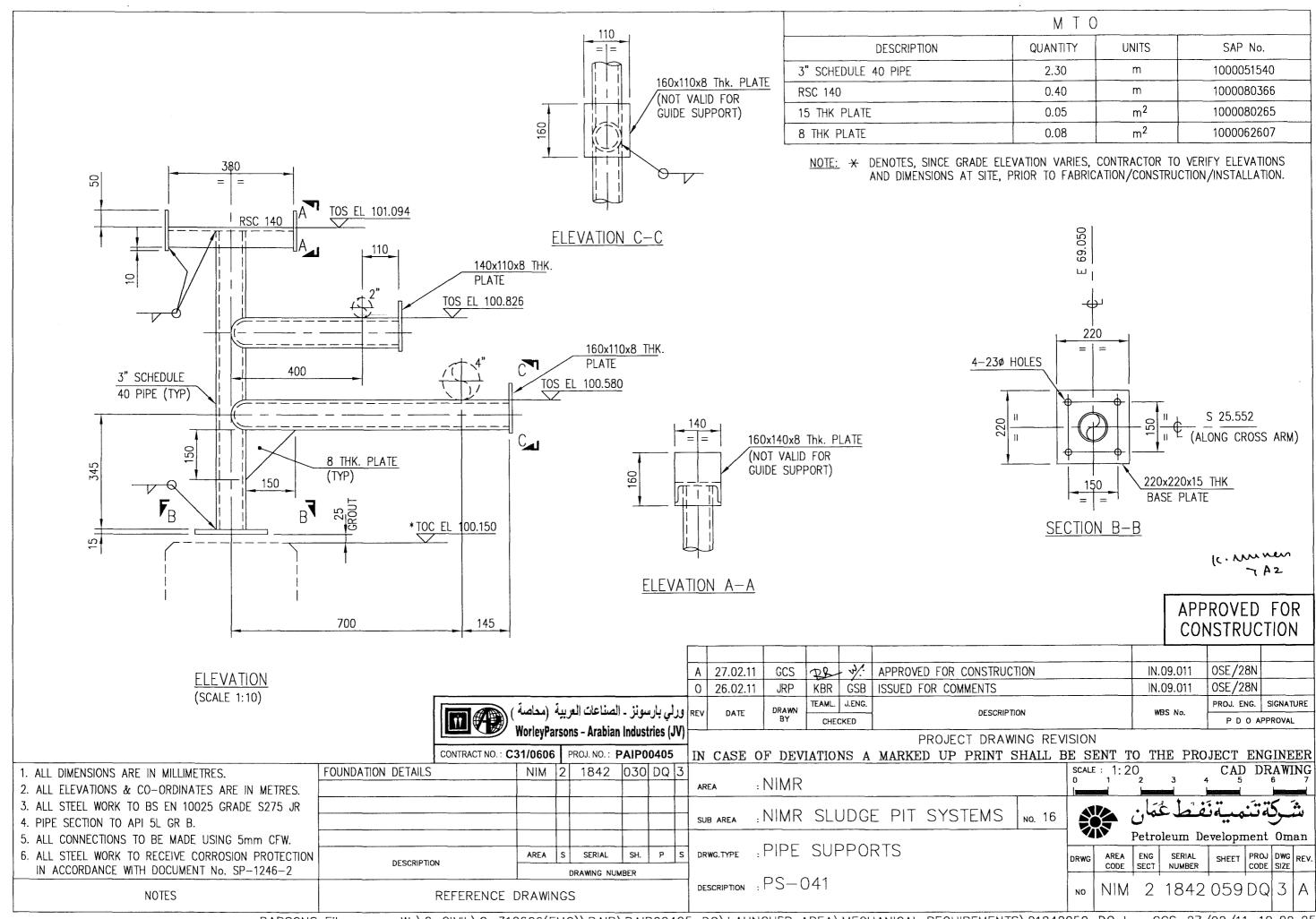
Total MTO for Rebars.

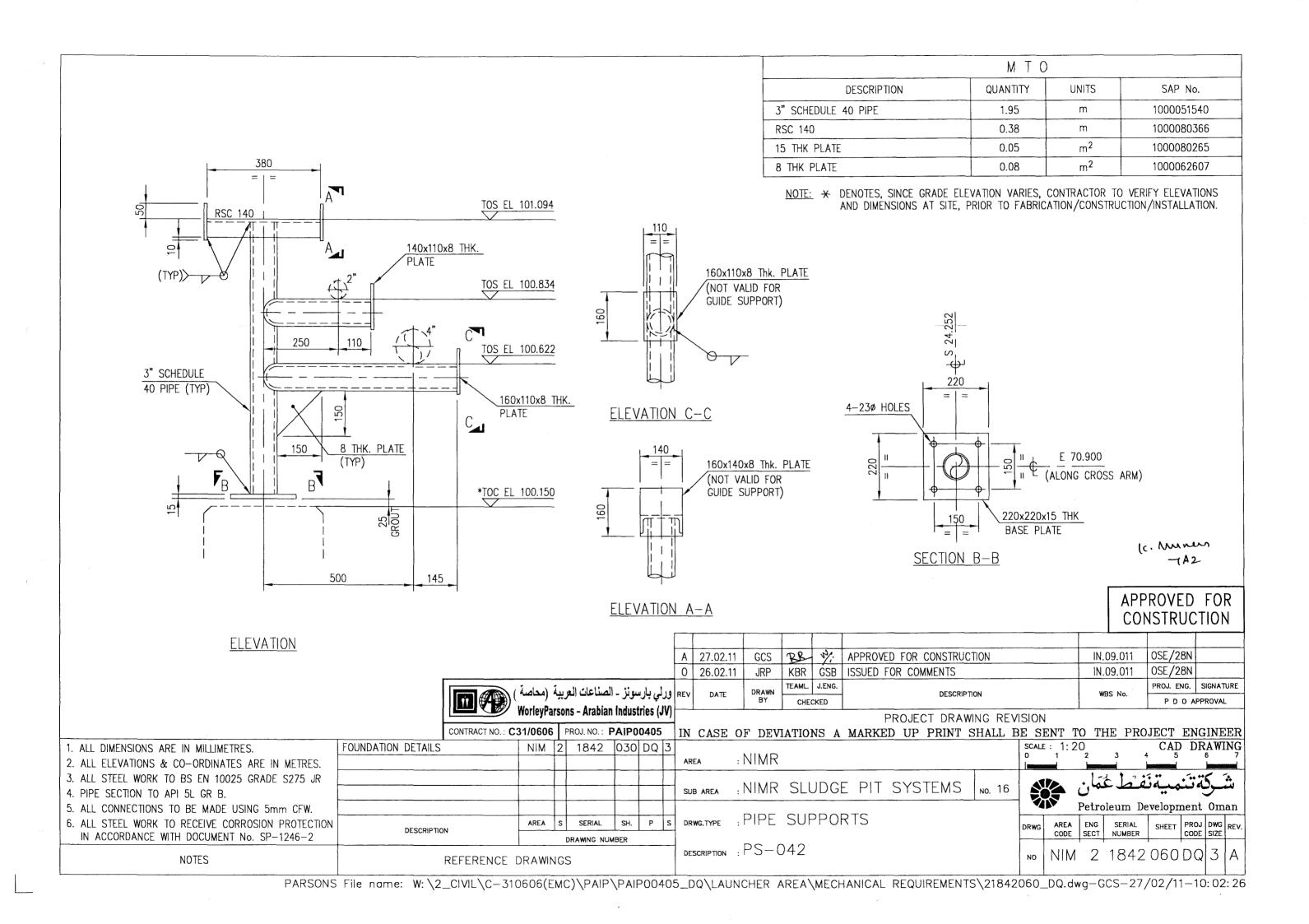
Dia. Of Bar T6 T8 T10 T12 T16 T20 T25 T32 Length of Bar (m) 11.85 46.35 17.40 Weight (Kgs) 4.74 28.74 15.49 Total Weight (Kgs)

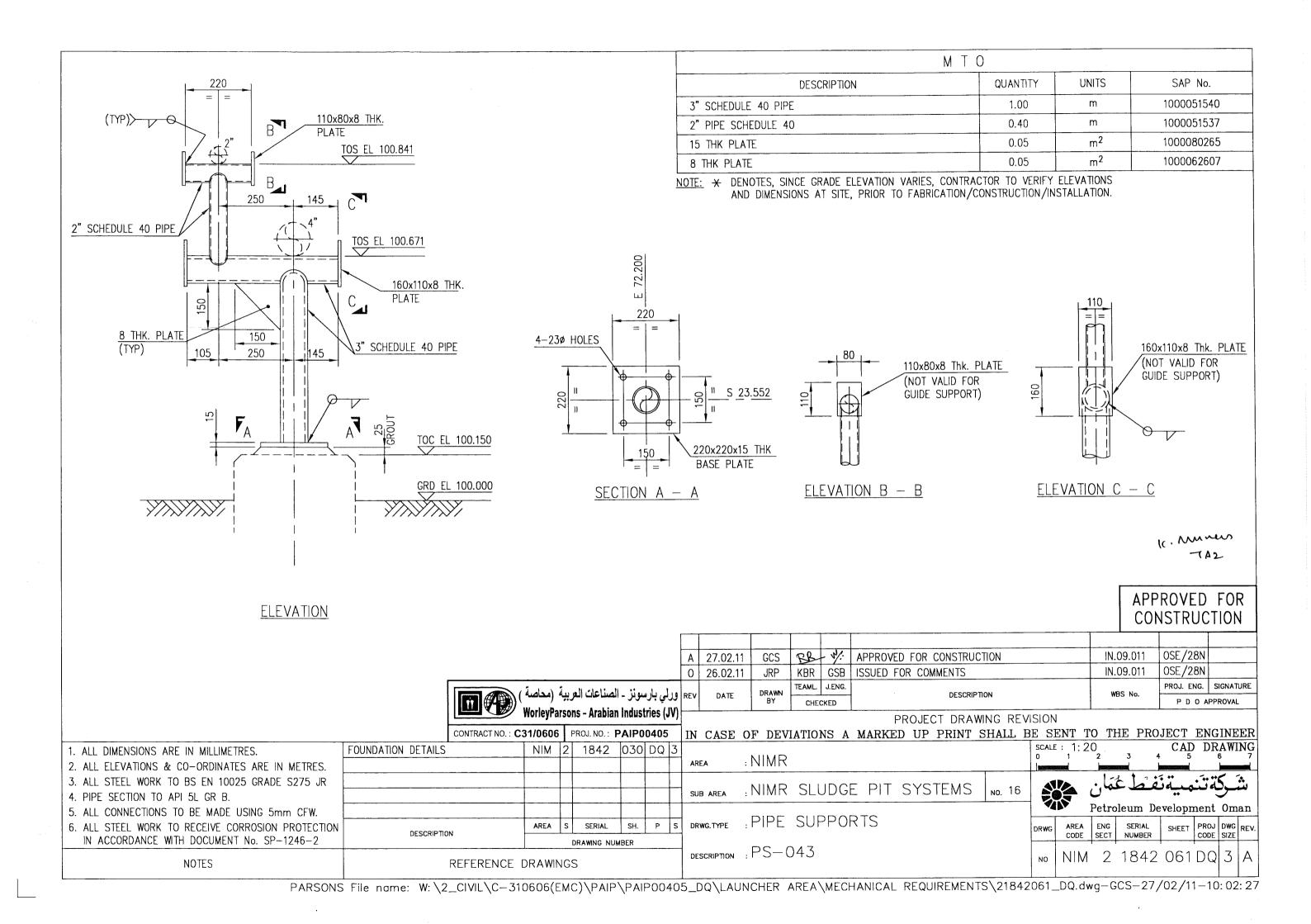
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C.	D.	E/R*
PS-038 & 046	1	T10	1	12	12	1125	21	125	900	125		
	2	T10	1	18	18	1825	21	125	1600	125		
	3	T12	1	24	24	725	11	200	530			
	4	Т8	1	6	6	1975	51	450	450			
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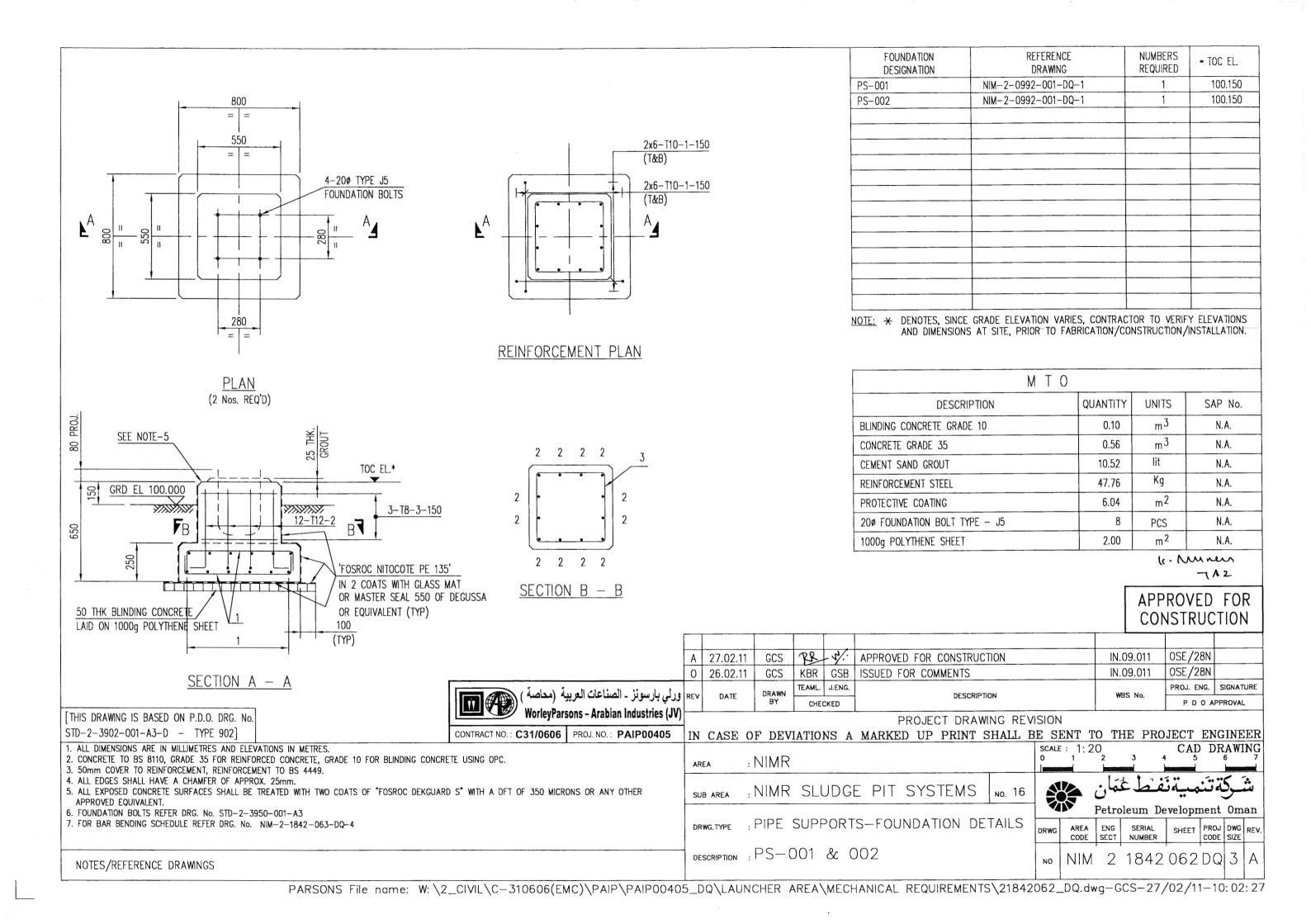
<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm

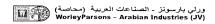












JOB NO.:

PAIP00405

Document No.: NIM-2-1842-063-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.:

PS-001 & 002

Prepared by: Checked by: GCS PNG

REF. DWG NO.: NIM-2-1842-062-DQ-3

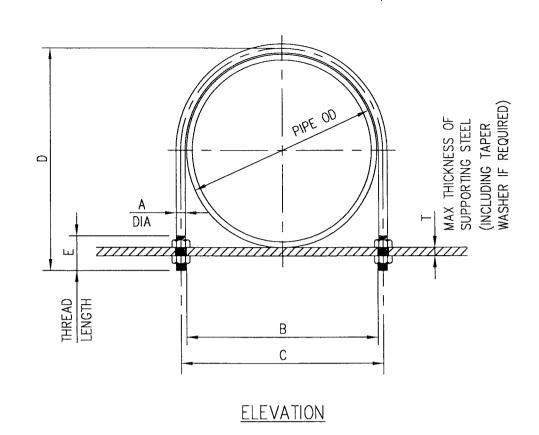
Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		11.85	44.40	17.40				
Weight (Kgs)		4.74	27.53	15,49				
Total Weight (Kgs)	)							47.760

Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B,	C*	D.	E/R'
PS-001 & 002	1	T10	2	24	48	925	21	125	700	125		
	2	T12	2	12	24	725	11	200	530			
	3	Т8	2	3	6	1975	51	450	450			
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	MATERIAL GUIDE								
	BAR	NUTS							
SIZE	SAP No.	SIZE	SAP No.						
8	1000080335	М8	1000063795						
10	1000062586	M10	1000063796						
16	1000062588	M16	1000063798						
20	N.A.	M20	1000063799						
24	N.A.	M24	1000120055						

	PIPE GUIDE	NOMINAL	PIPE SIZE	PIPE			DIMEN	SIONS			Nos.
	DESIGNATION	INCHES	MM	OD	А	В	C	D	Ε	Ţ	REQD.
	UB-0.5	1/2"	15	21.3	8	32	40	45	30	10	_
	UB-0.75	3/4"	20	26.7	8	37	45	55	35	10	
	UB-1	1"	25	33.4	8	42	50	60	35	10	_
	UB-1.5	11/2"	40	48.3	10	55	65	85	45	16	_
-	UB-2	2"	50	60.3	10	70	80	100	45	16	7
-	UB-3	3"	80	88.9	16	94	110	140	60	19	2
-	UB-4	4"	100	114.3	16	124	140	165	60	19	3
	UB-6	6"	150	168.3	20	175	195	225	70	19	
	UB-8	8"	200	219.1	20	230	250	275	70	19	-
	UB-10	10"	250	273.0	20	285	305	335	75	22	_
	UB-12	12"	300	323.9	20	335	355	385	75	22	
	UB-14	14"	350	355.6	24	366	390	425	80	22	_
	UB-16	16"	400	406.4	24	416	440	475	80	22	_
	UB-18	18"	450	457.0	24	471	495	525	80	22	_
	UB-20	20"	500	508.0	24	521	545	575	80	22	_
	UB-24	24"	600	610.0	24	621	645	675	80	22	_
	UB-28	28"	700	711.2	24	721	745	775	80	22	_
	UB-30	30"	750	762.0	24	771	795	825	80	22	_

1. Muneus -(A2

### APPROVED FOR CONSTRUCTION

OSE/28N BB vg. APPROVED FOR CONSTRUCTION IN.09.011 A 27.02.11 OSE/28N IN.09.011 0 | 26.02.11 GCS KBR | GSB ISSUED FOR COMMENTS PROJ. ENG. SIGNATURE TEAML. J.ENG. DRAWN BY DESCRIPTION P D O APPROVAL PROJECT DRAWING REVISION

| REV | ورلى بارسونز - الصناعات العربية (محاصة WorleyParsons - Arabian Industries (JV)

CONTRACT NO.: **C31/0606** | PROJ. NO.: **PAIP00405** 

DRAWING NUMBER

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER :NIMR AREA

2 LOCKNUTS.

NUTS TO ISO 898/11 GR 8

2. EACH BOLT TO BE SUPPLIED WITH 2 NUTS &

4.U-BOLT CORROSION PROTECTION SHALL COMPLY WITH SP-1246-2

REFERENCE DRAWINGS

:PIPE SUPPORTS

DESCRIPTION : 'U' BOLT (PIPE NOT GRIPPED) DETAILS

:NIMR SLUDGE PIT SYSTEMS

Petroleum Development Oman

AREA ENG SERIAL CODE SECT NUMBER SHEET PROJ DWG REV. NIM 2 1842 064 DQ 3 A

PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\MECHANICAL REQUIREMENTS\21842064\_DQ.dwg-GCS-27/02/11-10:02:28

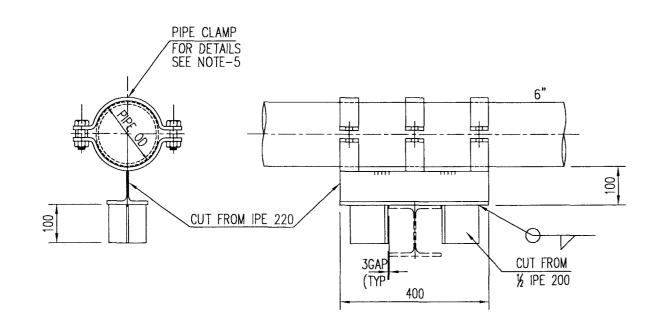
[THIS DRAWING IS BASED ON P.D.O. DRG. No.] STD-2-3818-001-A3-D - TYPE 818]

1. ALL DIMENSIONS ARE IN MILLIMETRES.

3. MATERIAL-BOLTS TO BS EN 10025 GR S275 JR

NOTES

DESCRIPTION



PS-002, 008, 013 & 036

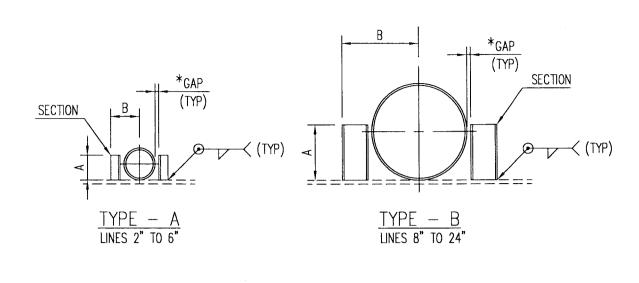
SUPPORT NUMBER	REFERENCE DRAWING	PIPE SIZE	NUMBER REQD.
PS-002	NIM-3-2142-001-DQ-1	6"	1
PS-008	NIM-3-2141-001-DQ-1		
PS-013	NIM-3-2141-001-DQ-1		
PS-036	NIM-3-2140-001-DQ-1		

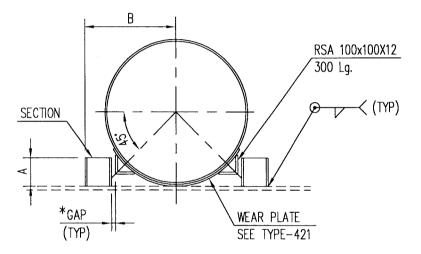
M T	0		
DESCRIPTION	QUANTITY	UNITS	SAP No.
IPE 220	1.6	m	1000165322
IPE 200	0.80	m	1000080437
HE 300 B		m	1000062639
10THK. PLATE	-	m <sup>2</sup>	1000062608

1. Nuneus TA2

## APPROVED FOR CONSTRUCTION

A 27.02.11 APPROVED FOR CONSTRUCTION IN.09.011 OSE/28N GCS B 1/2 0 26.02.11 GCS KBR GSB ISSUED FOR COMMENTS IN.09.011 OSE/28N TEAML J.ENG. PROJ. ENG. SIGNATURE REV ورلي بارسونز - الصناعات العربية (محاصة DRAWN DESCRIPTION P D O APPROVAL CHECKED WorleyParsons - Arabian Industries (JV) PROJECT DRAWING REVISION CONTRACT NO.: C31/0606 PROJ. NO.: **PAIP00405** IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER 1. ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT PIPE SIZE. 2. ALL STEEL WORK TO BS EN 10025 GRADE S275 JR. PIPE SUPPORTS-INDEX SHEET NIM CAD DRAWING 1842 | 028 DQ 3 3. ALL WELDS TO BE 6mm NON PENETRATING CFW : NIMR PIPE CLAMP DETAIL 2184 071 DQ 3 AREA NIM NO HOLES IN LINE PIPE. 4. ALL STEEL WORK TO RECEIVE CORROSION PROTECTION :NIMR SLUDGE PIT SYSTEMS <sub>NO.</sub> 16 IN ACCORDANCE WITH DOCUMENT No. SP-1246-2 5. REFER STD-2-3812-001 FOR PIPE CLAMP TYPE-812 Petroleum Development Oman DRWG.TYPE : PIPE SUPPORTS -SERIAL AREA ENG SERIAL CODE SECT NUMBER SHEET PROJ DWG REV. SH. DESCRIPTION DRAWING NUMBER .PIPE CLAMP WITH SHOE AND NIM 2 1842 065 DQ 3 A NOTES REFERENCE DRAWINGS LINE STOP DETAILS





TYPE - C LINES 30" & ABOVE \* - GAP SHALL BE AS PER PIPING GA.

IF NOT SPECIFIED IT SHALL BE 2mm

FOR LOCATION REFER PIPING GA.

	PIPE GUIDE	NOMINAL	PIPE SIZE	PIPE	DIMEN	ISIONS	SECTION	Nos.
	DESIGNATION	INCHES	ММ	OD	Α	В	SECTION	REQD.
-	PG-2	2"	50	60.3	55	82	RSA 50x50x6	6
	PG-3	3"	80	88.9	80	97	RSA 50x50x6	_
-	PG-4	4"	100	114.3	80	110	RSA 50x50x6	3
-	PG-6	6"	150	168.3	110	137	RSA 50x50x6	5
	PG-8	8"	200	219.1	160	212	RSC 100	
	PG-10	10"	250	273.0	160	239	RSC 100	_
	PG-12	12"	300	323.9	230	264	RSC 100	_
	PG-14	14"	350	355.6	230	280	RSC 100	
	PG-16	16"	400	406.4	230	306	RSC 100	_
	PG-18	18"	450	457.0	260	371	RSC 140	_
	PG-20	20"	500	508.0	290	396	RSC 140	_
	PG-24	24"	600	610.0	340	447	RSC 140	_
	PG-30	30"	750	762.0	150	464	RSC 140	_

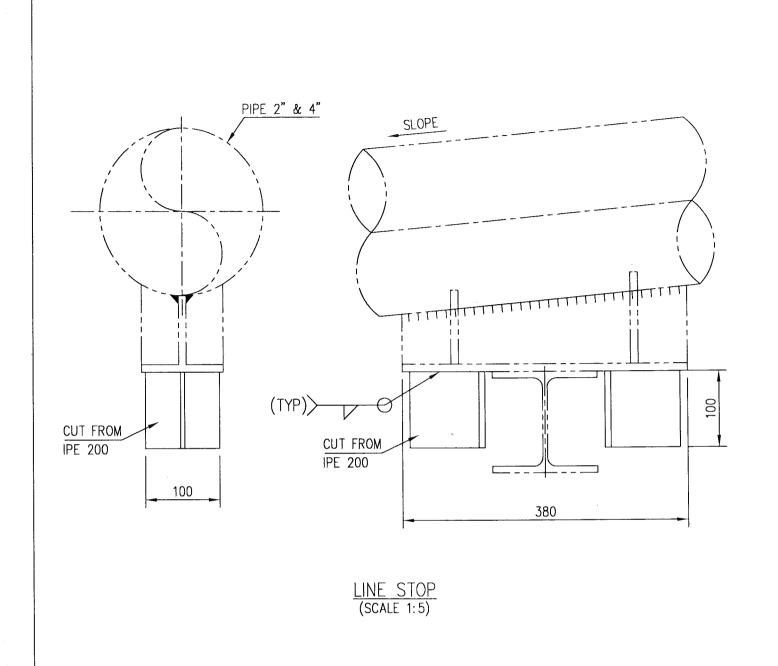
	M T O		
DESCRIPTION	QUANTITY	UNITS	SAP No.
RSC 140		m	1000080366
RSC 100		m	1000145612
RSA 100x100x12	-	m	1000142036
RSA 50x50x6	2.20	m	1000062629

K. Muneus TAZ

## APPROVED FOR CONSTRUCTION

						A   27.02.11	GCS	RB- W.	APPROVED FOR CONSTRUCTION		IN.09.011	OSE/28N	
					-	0 26.02.11			ISSUED FOR COMMENTS		IN.09.011	OSE/28N	
		رة د داد ة ٢	ام نامات الم	1 11 1	1		DRAWN	TEAML. J.ENG.			WBS No.	PROJ. ENG.	SIGNATURE
		` ,	لصناعات العرب		•	EV DATE	BY	CHECKED	DESCRIPTION		WBS NO.	PDOA	PPROVAL
[THIS DRAWING IS BASED ON P.D.O. DRG. No.		WorleyPars	ons - Arabiar	n Industrie	s (JV)				PROJECT DRAWING RE	VISION			
STD-2-3604-001-A3-C - TYPE 604]	CONTRACT NO.: C	31/0606	PROJ. NO.:	PAIP004	05	IN CASE	OF DEV	TATIONS A	MARKED UP PRINT SHALL	BE SENT	TO THE PR		
1. ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT PIPE SIZE										SCALE : NT	TS ,	CAD D	RAWING
2. ALL STEEL WORK EXCEPT REINFORCING PLATE TO						AREA	: NIMR						
TO BS EN 10025 GR S275 JR							NIII A D	CLLIDO	E DIT CYCTEMS	ATA.	ما عُمَا ٠	تنميةنف	35. A
3. ALL CONNECTIONS TO BE MADE USING 6mm CFW.						SUB AREA	: NIMH	SLUDG	E PIT SYSTEMS No. 16		O ·	**	
4. STEELWORK CORROSION PROTECTION SHALL COMPLY							D. D.	011000	5.70	<b>40</b>	Petroleum :	Developmen	t Oman
WITH SP-1246-2	DESCRIPTION	AREA S	SERIAL	SH.	s	DRWG.TYPE	:PIPE	SUPPO	RIS	DRWG AREA	ENG SERIAL SECT NUMBER	SHEET PRO	DU DWG REV.
	DESCRIPTION		DRAWING NUI	MBER			חוחר	CHIDE	DETAILC	CODE	<del></del>	1 1	
NOTES	REFERENCE	DRAWING	SS			DESCRIPTION	: PIPE	GUIDE	DETAILS	NO NIN	1 2 184	2 066 D	2 3 A

PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\MECHANICAL REQUIREMENTS\21842066\_DQ.dwg-GCS-27/02/11-10:02:29

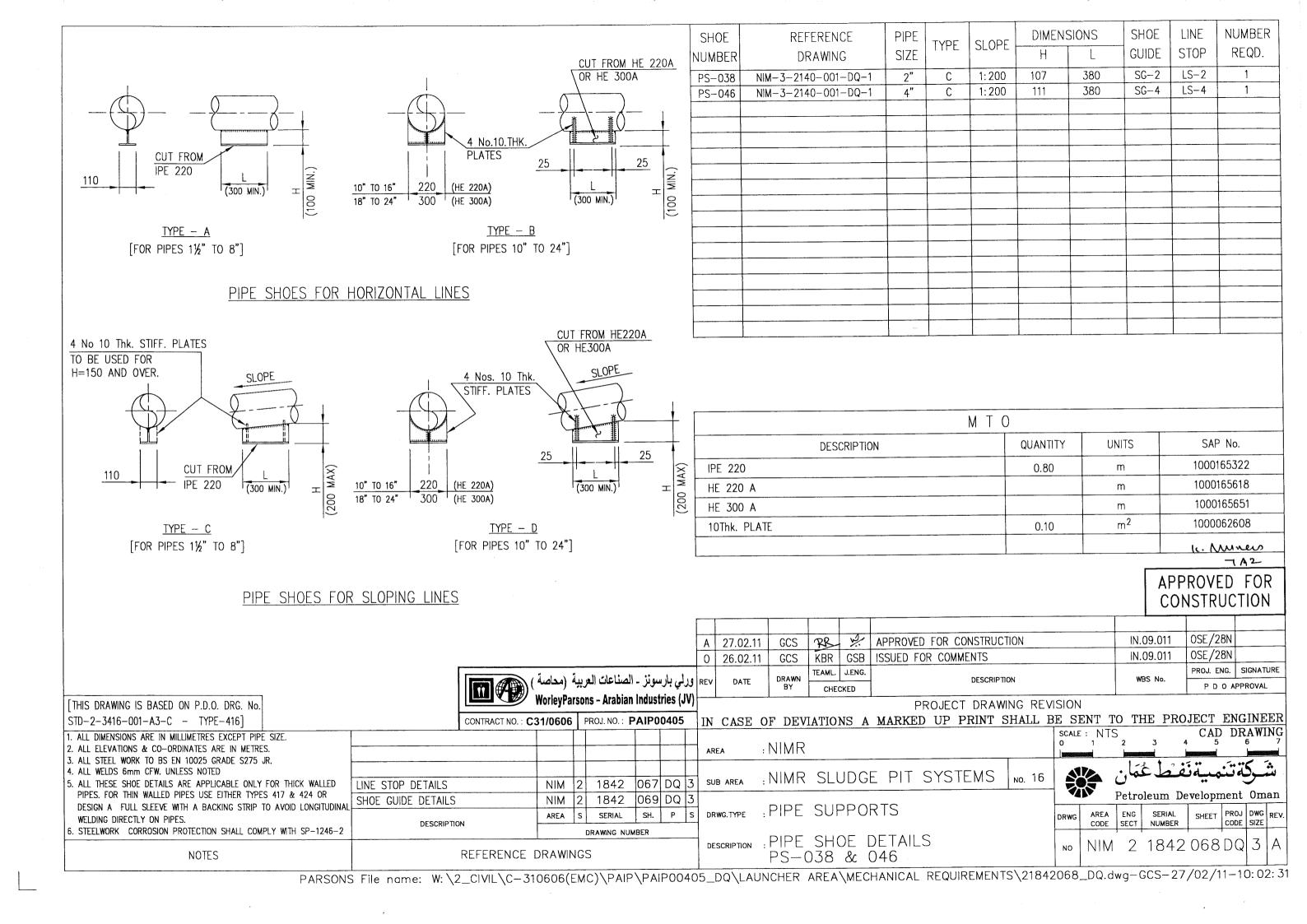


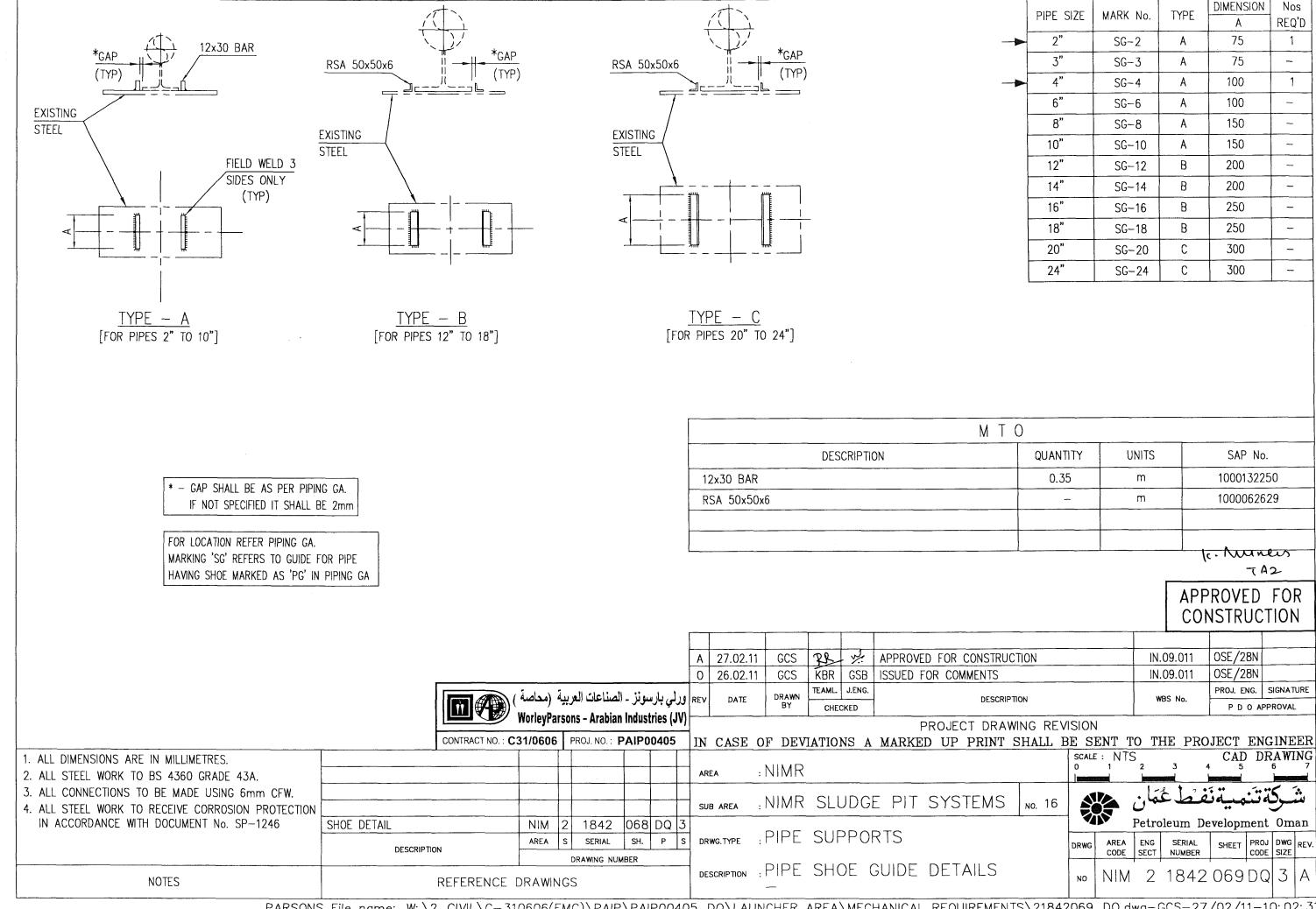
SHOE NUMBER	REFERENCE DRAWING	PIPE SIZE	SLOPE	LINE STOP	NUMBER REQD.
PS-038	NIM-3-2140-001-DQ-1	2"	1: 200	LS-2	1
PS-046	NIM-3-2140-001-DQ-1	4"	1: 200	LS-4	1
				·	
-					

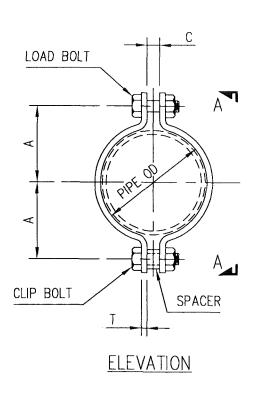
C		
QUANTITY	UNITS	SAP No.
0.40	m	1000080437
	m	1000165618
	m	1000165651
	m <sup>2</sup>	1000062608
		v. Muneus

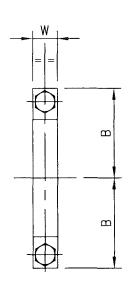
# APPROVED FOR CONSTRUCTION

					A	27.02.11	GCS	28	بردلا	APPROVED FOR CONSTRUCTION	)N	IN.09.011	OSE/28N	
					0	26.02.11	GCS			ISSUED FOR COMMENTS		IN.09.011	OSE/28N	
			سناعات العربية				DRAWN BY	TEAML.		DESCRIPTION		WBS No.	PROJ. ENG.	
·	CONT	Worley Fract No.: C31/060	Parsons - Arabia	PAIP0040	<u>'</u>	N CASE O	F DEV	TATION	JS A	PROJECT DRAWING MARKED UP PRINT SH		O THE PRO	JECT EN	IGINEER
ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT PIPE SIZE.     ALL ELEVATIONS & CO-ORDINATES ARE IN METRES.							NIMR				SCALE : NTS 0 1		CAD D	RAWING 6 7
3. ALL STEEL WORK TO BS EN 10025 GRADE S275 JR. 4. ALL WELDS 6mm CFW. UNLESS NOTED 5. ALL THESE SHOE DETAILS ARE APPLICABLE ONLY FOR THICK WALLED					5	SUB AREA :	NIMR	SLU	JDG	E PIT SYSTEMS N	ио. 16	فنط عُمَان	تنميةن	شكة
PIPES. FOR THIN WALLED PIPES USE EITHER TYPES 417 & 424 OR DESIGN A FULL SLEEVE WITH A BACKING STRIP TO AVOID LONGITUDINAL WELDING DIRECTLY ON PIPES.	DESCRIPTION	AREA	S SERIAL	SH. P	S	DRWG.TYPE :	PIPE	SUF	POF	RTS	DRWG AREA	Petroleum D  ENG SERIAL SECT NUMBER	SHEET PRO	oj pwg <sub>REV.</sub>
6. STEELWORK CORROSION PROTECTION SHALL COMPLY WITH SP-1246-2  NOTES		ERENCE DRAW	DRAWING N	UMBER		DESCRIPTION :	LINE PS-0			DETAILS FOR 046		2 1842	1	
PARSONS	File name: W:\2_CIV	/IL\C-310606(	(EMC)\PAIF	P\PAIP00	405_	_DQ\LAUN	CHER .	AREA\	MECH	HANICAL REQUIREMENTS\	21842067_DQ.dv	rg-GCS-27	/02/11-	10: 02: 30









VIE	W	Α	 Α
VIL	٧V	Н	 М

DESCRIPTION

	MATERIA	L GUIDE	
	BOLTS		FLATS
SIZE	SAP No.	SIZE	SAP No.
M12 x 45	1000062908	25 x 5	1000132190
M20 x 65	1000062911	40 x 6	1000080324
M24 x 75	1000099912	60 x 10	1000132245
M30 x 100	1000099927	65 x 12	1000132279
M30 x 120	1000099928	65 x 15	1000132316
M36 x 120	1000099948	120 x 20	1000132382

PIPE GUIDE	NOMINAL	PIPE SIZE	PIPE		DIM	ENSIONS		BOLTS	Nos.
DESIGNATION	INCHES	ММ	OD	А	В	С	W×T	DIA x Lg.	REQD.
PC-0.5	1/2"	15	21.3	32	51	12	25 x 5	M12 x 45	_
PC-0.75	3/4"	20	26.7	32	51	12	25 x 5	M12 x 45	_
PC-1	1"	25	33.4	38	57	12	25 x 5	M12 x 45	_
PC-1.5	11/2"	40	48.3	50	70	16	40 x 6	M12 x 45	_
PC-2	2"	50	60.3	58	85	16	40 x 6	M12 x 45	_
PC-3	3"	80	88.9	85	110	20	40 x 6	M20 x 65	
PC-4	4"	100	114.3	96	127	24	60 x 10	M24 x 75	_
PC-6	6"	150	168.3	135	175	28	65 x 12	M24 x 75	12
PC-8	8"	200	219.1	160	200	28	65 x 12	M24 x 75	
PC-10	10"	250	273.0	200	235	34	65 x 15	M30 x 100	_
PC-12	12"	300	32 <del>3.9</del>	235	280	34	120 x-20-	M30 x 100	· · · · · -
PC-14	14"	350	355.6	255	305	40	120 x 20	M36 x 120	
PC-16	16"	400	406.4	280	330	40	120 x 20	M36 x 120	_
PC-18	18"	450	457.0	305	360	40	120 x 20	M36 x 120	
PC-20	20"	500	508.0	330	385	40	120 x 20	M36 x 120	
PC-24	24"	600	610.0	395	445	40	120 x 20	M36 x 120	
PC-30	30"	750	762.0	470	520	40	120 x 20	M36 x 120	_
PC-32	32"	800	812.8	500	550	40	120 x 20	M36 x 120	<del>-</del>
PC-36	36"	900	914.4	550	600	40	120 x 20	M36 x 120	_

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## APPROVED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION OSE/28N IN.09.011 A 27.02.11 GCS 0 26.02.11 GCS KBR | GSB | ISSUED FOR COMMENTS IN.09.011 OSE/28N PROJ. ENG. SIGNATURE TEAML J.ENG. | REV | ورلى بارسونز - الصناعات العربية (محاصة DRAWN BY DATE DESCRIPTION WBS No. P D O APPROVAL PROJECT DRAWING REVISION

[THIS DRAWING IS BASED ON P.D.O. DRG. No. STD-2-3812-001-A3-D - TYPE 812]

- ALL DIMENSIONS ARE IN MILLIMETRES.
   EACH CLAMP TO BE SUPPLIED COMPLETE WITH 2 BOLTS & NUTS AND 1 TUBULAR DISTANCE PIECE.
- 3. MATERIAL—BAR TO BS EN 10025 GR S275 JR BOLTS TO ISO 898/1 GR4.6, NUTS TO ISO 898/2 GR4, CLAMP SPACER—CARBON STEEL

NOTES

4. PIPE CLIP CORROSION PROTECTION SHALL COMPLY WITH SP-1246-2

WorleyParsons - Arabian Industries (JV)

CONTRACT NO.: C31/0606 PROJ. NO.: PAIP00405 I

REFERENCE DRAWINGS

SERIAL

DRAWING NUMBER

SH.

: NIMR
EA : NIMR SLUDGE PIT SYSTEMS NO. 16

DRWG.TYPE : PIPE SUPPORTS

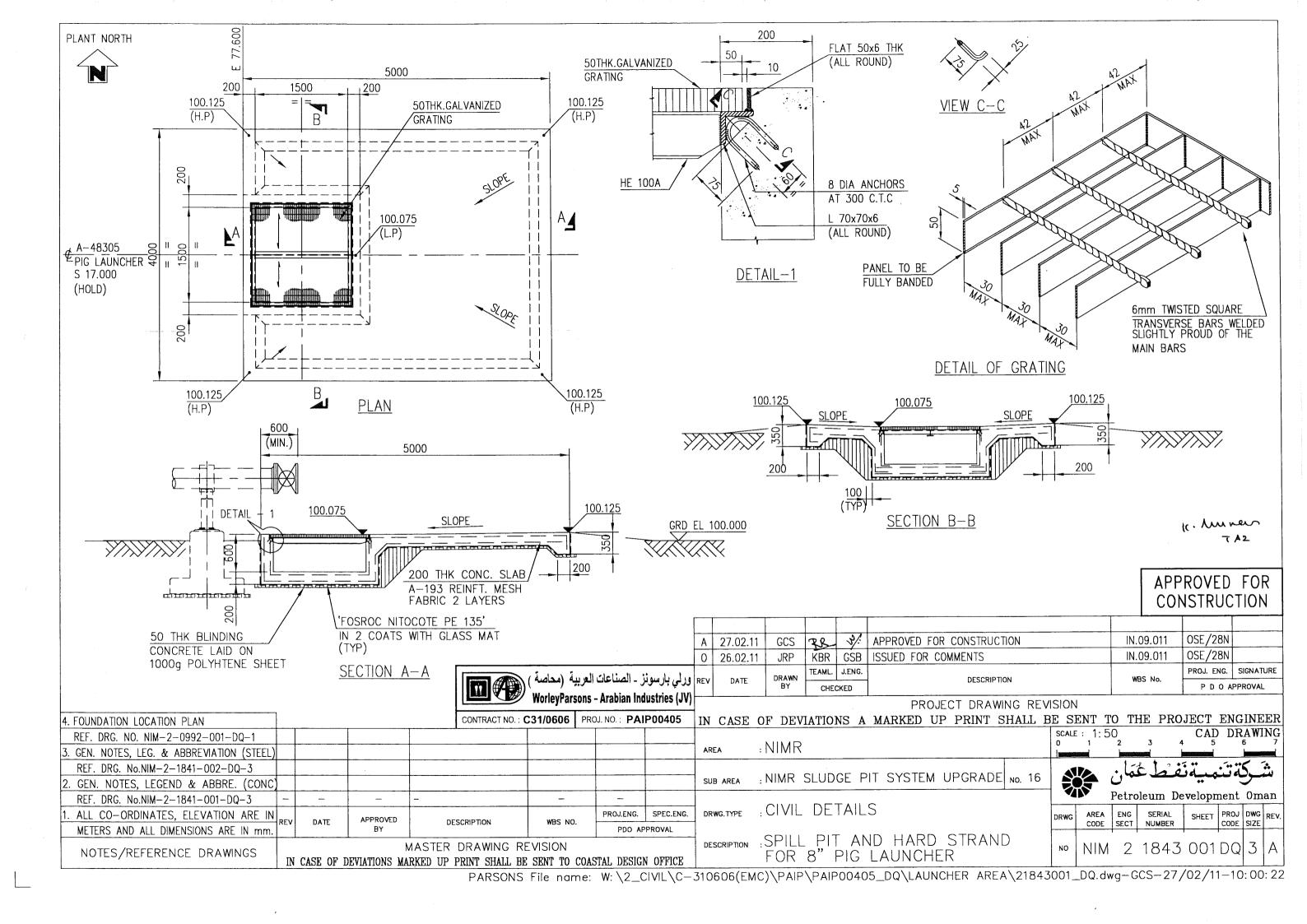
DESCRIPTION : PIPE CLIP (HEAVY) DETAILS

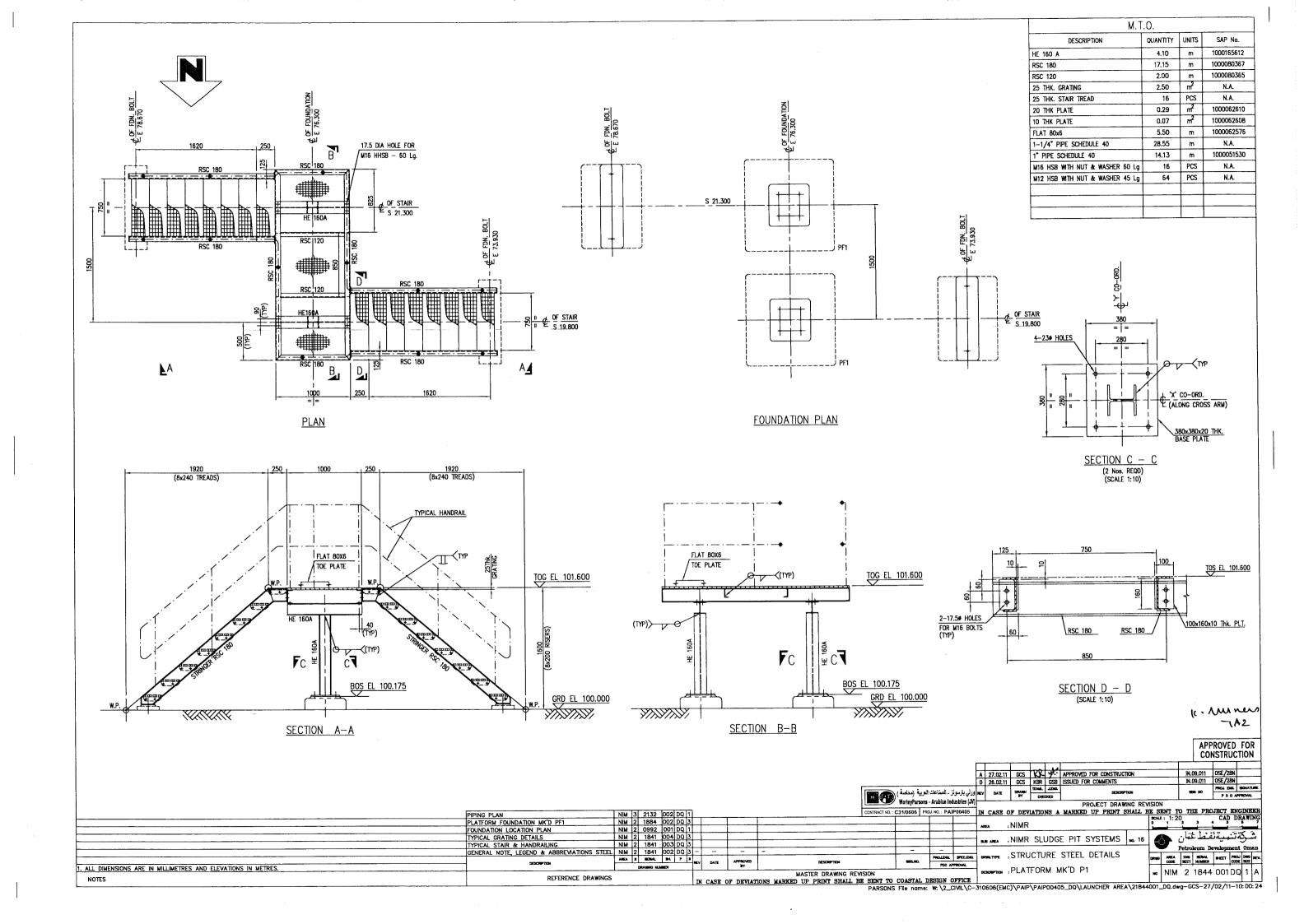
Petroleum Development Oman

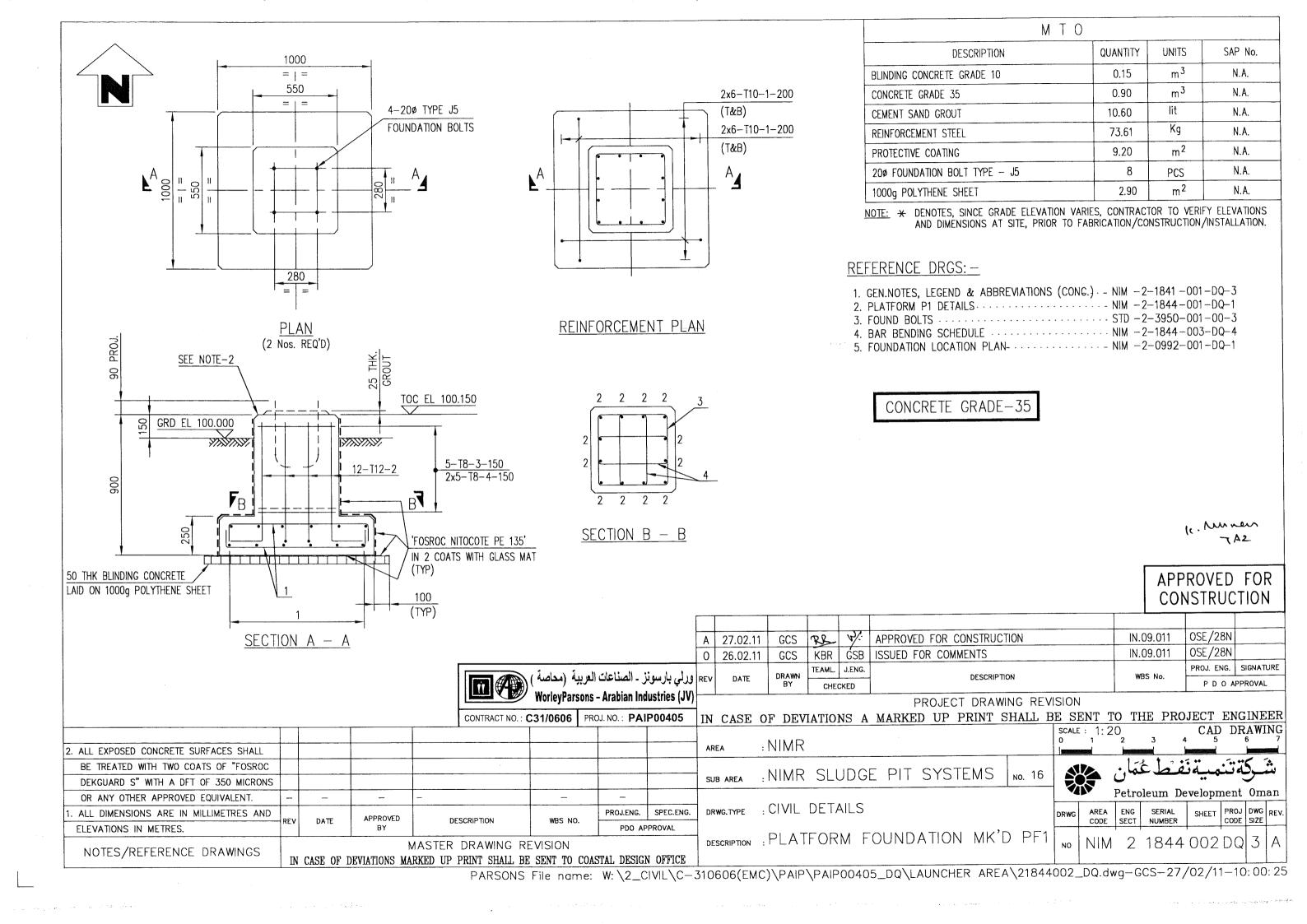
wg AREA ENG SERIAL SHEET PROJ DWG REV.

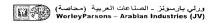
ON NIM 2 1842 070 DQ 3 A

PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\MECHANICAL REQUIREMENTS\21842070\_DQ.dwg-GCS-27/02/11-10:02:32









JOB NO.: PART ID.: PAIP00238

REF. DWG NO.: NIM-2-1844-002-DQ-3

NIMR SLUDGE PIT SYSTEMS

PLATFORM-P1

Document No.: NIM-2-1844-003-DQ-4

Revision No.:

Α GCS

Prepared by: Checked by:

PNG R

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		48.25	54.00	23,40	1			
Weight (Kgs)		19.30	33.48	20.83				

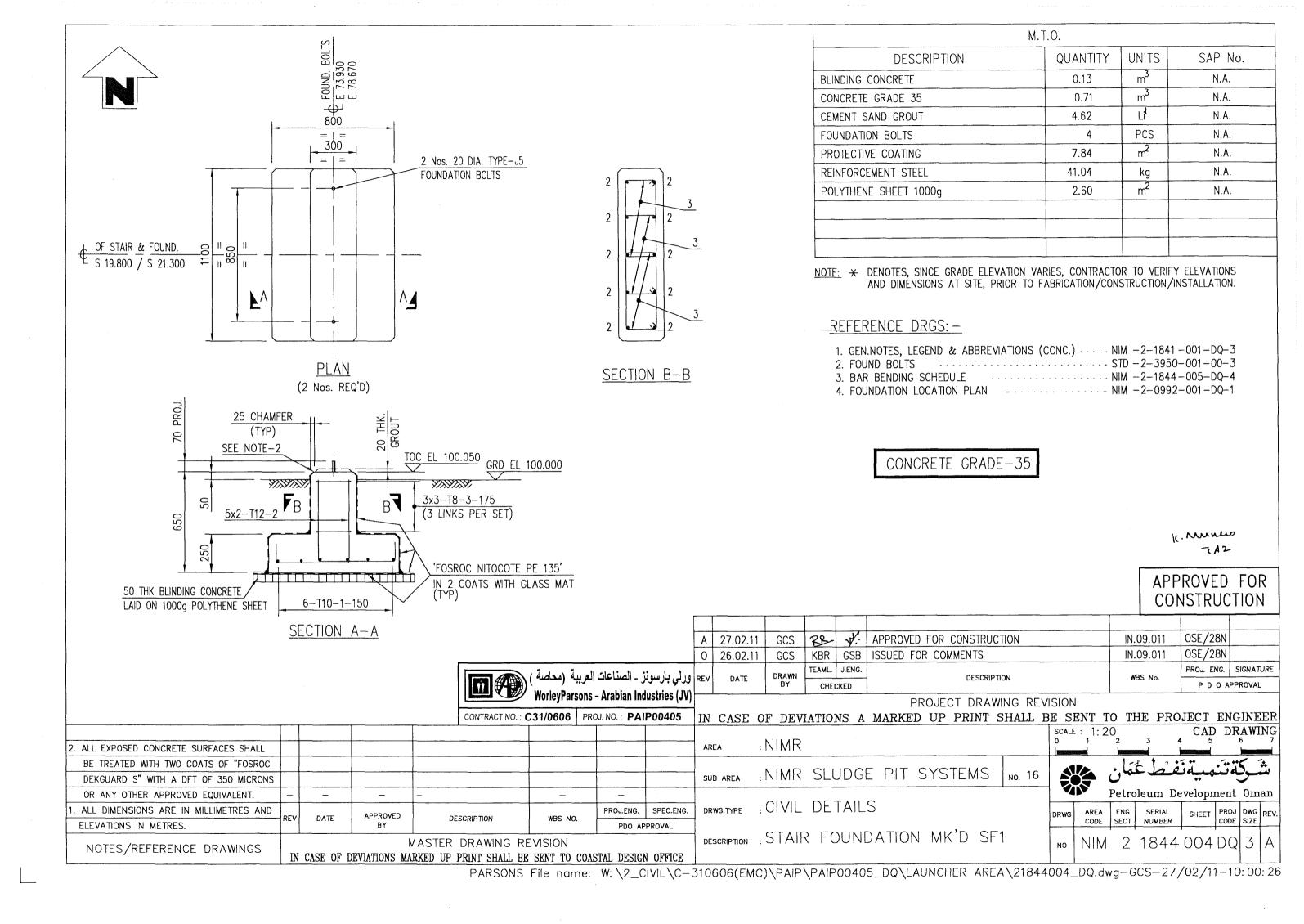
Designation	Bar Mark	Type &	Nos. Reqd	No. of Bars in	Total Nos.	Length of each Bar	Shape code	A*
Total Weight (Kgs	)	<b>^</b>			•			73.610
Weight (Kgs)		19.30	33.48	20.83				
Length of Bar (m)		48.25	54.00	23.40				
וטע גט. טונען	10	, , ,	, , , ,	114	1 110	120	145	174

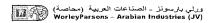
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar †	Shape code	A*	B*	C,	D.	E/R*
PLATFORM-P1	1	T10	2	24	48	1125	21	125	900	125		
	2	T12	2	12	24	975	11	200	780			
	3	Т8	2	5	10	1975	51	450	450			37.48 L 35.4 He AC
	4	Т8	2	10	20	1425	51	450	175			
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All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm





JOB NO.: PART ID.: PAIP00238

REF. DWG NO.: NIM-2-1844-004-DQ-3

NIMR SLUDGE PIT SYSTEMS

STAIR FOUNDATION

Document No.: NIM-2-1844-005-DQ-4

Revision No.: A

GCS

Prepared by: Checked by:

PNG

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		28.80	15.30	22.50				
Weight (Kgs)		11.52	9.49	20.03				
Total Weight (Kgs	)							41:040

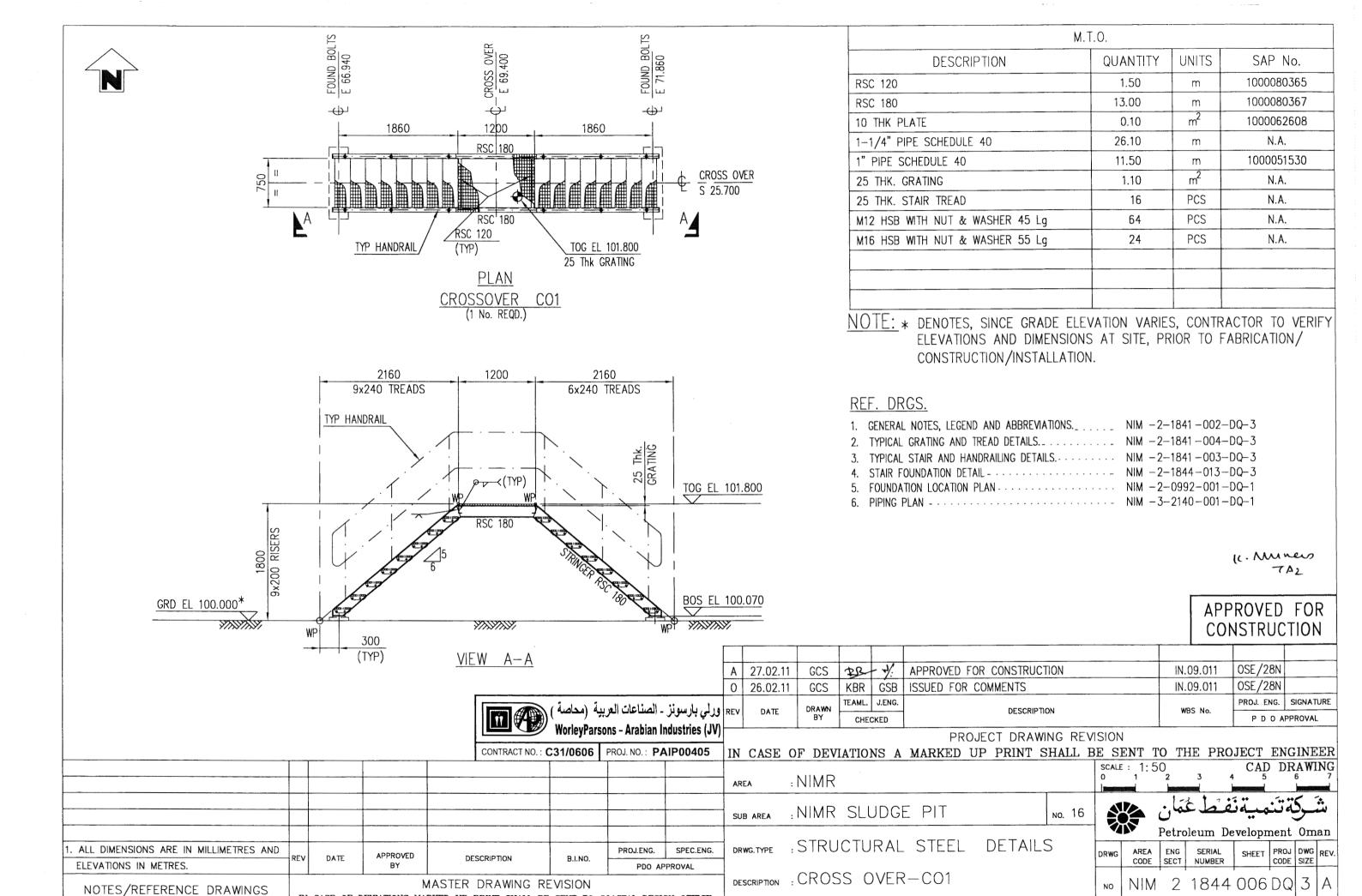
1c. Muneus 7A2

Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D.	E/R*
STAIR	1	T10	2	6	12	1275	21	150	1000	150		400.5
FOUNDATION	2	T12	2	10	20	1125	21	150	450	550		
	3	Т8	2	9	18	1600	51	520	200			
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This schedule complies with BS 8666 ; 2005 All dimensions are in mm

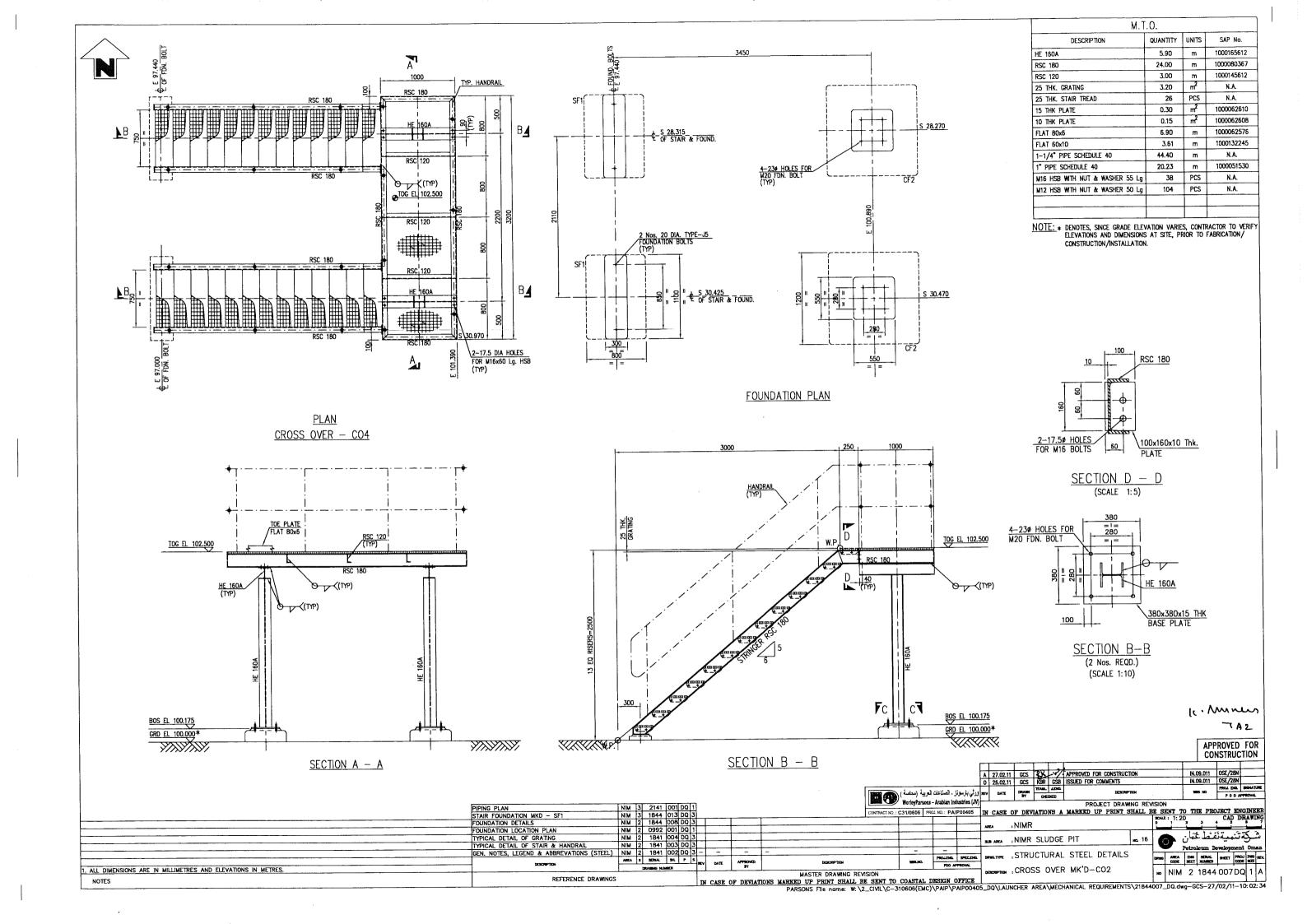
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

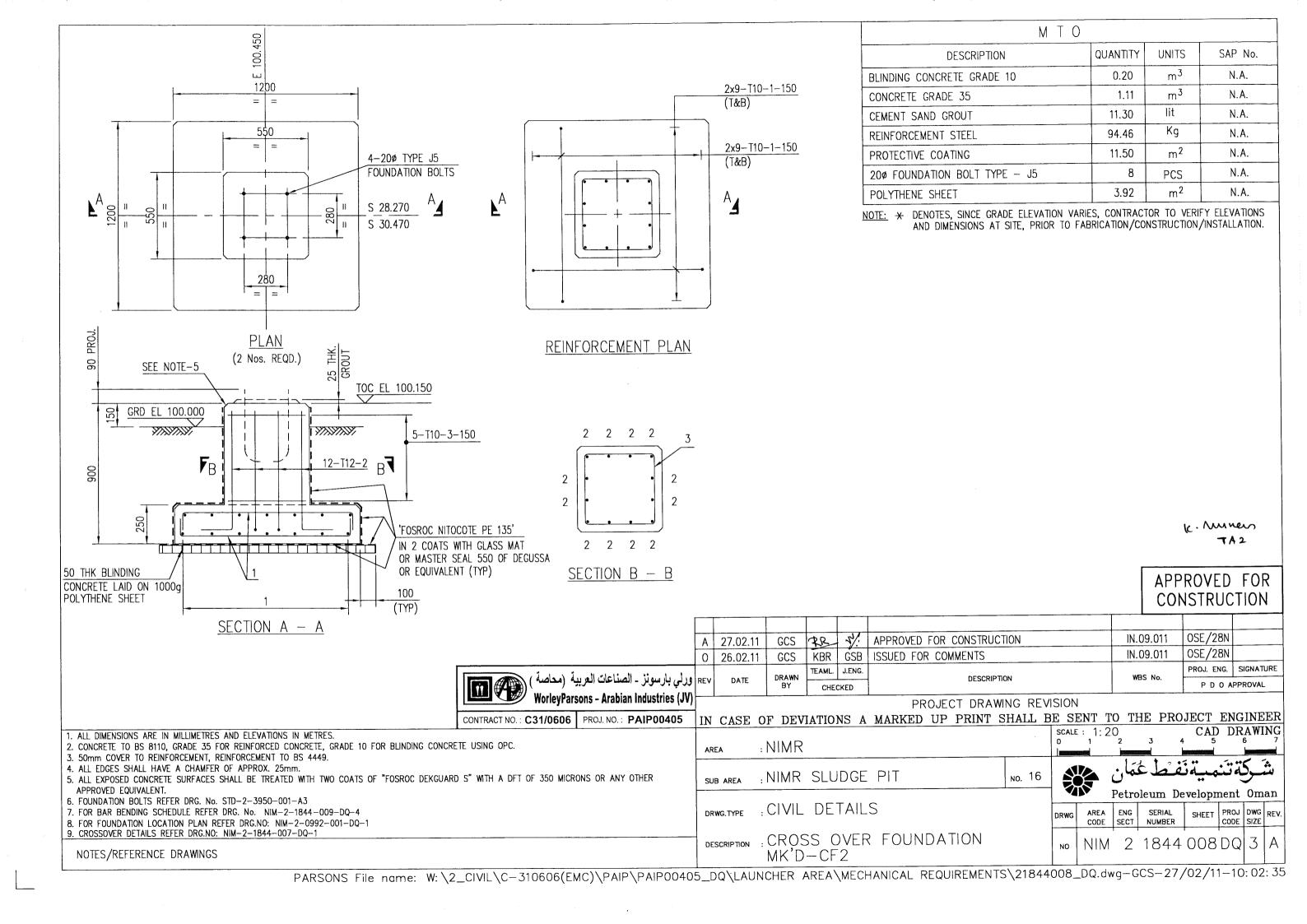
<sup>†</sup> Specified in multiples of 25 mm



IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE |

PARSONS File name: W: \2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\MECHANICAL REQUIREMENTS\21844006\_DQ.dwg-GCS-27/02/11-10: 02: 33







JOB NO.:

PA1P00405

Document No.: NIM-2-1844-009-CN-4

PART ID.:

CF2 - BAR BENDING SCHEDULE

Revision No.: Prepared by:

GCS

Checked by: Date:

PNG 29 27.02.11

REF. DWG NO.: NIM-2-1844-008-CN-3

Total MTO for Rebars.

Dia. Of Bar	TG	TΩ	T10	T12	T16	T20	T25	Т32
	10	10	110	112	110	120	123	132
Length of Bar (m)			118.75	23.40				
Weight (Kgs)			73.63	20.83				
Total Weight (Kgs)	)							94.460

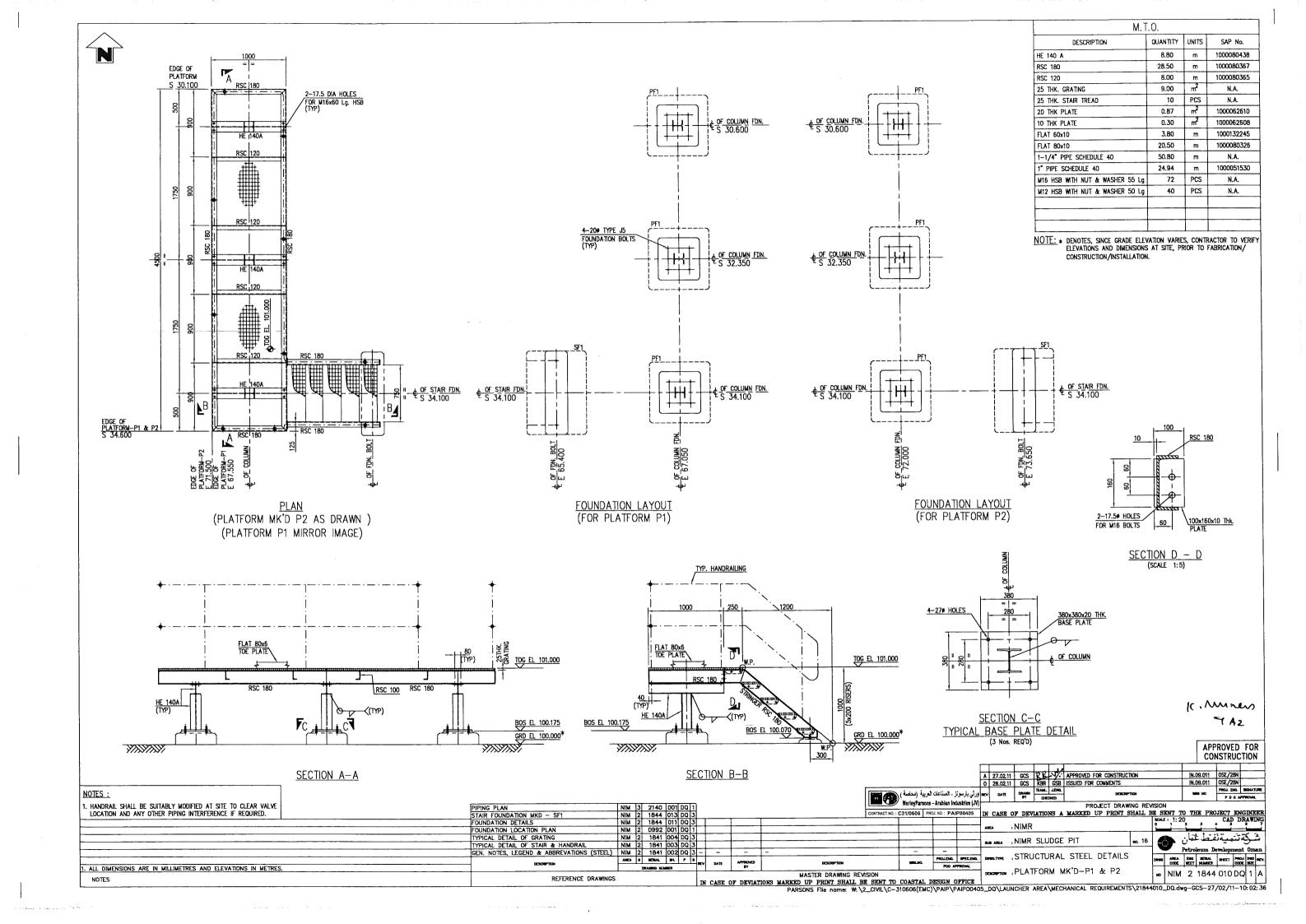
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C*	D.	E/R*
CF2	1	T10	2	36	72	1375	21	150	1100	150		
	2	T12	2	12	24	975	11	200	780			
	3	T10	2	5	10	1975	51	450	450			
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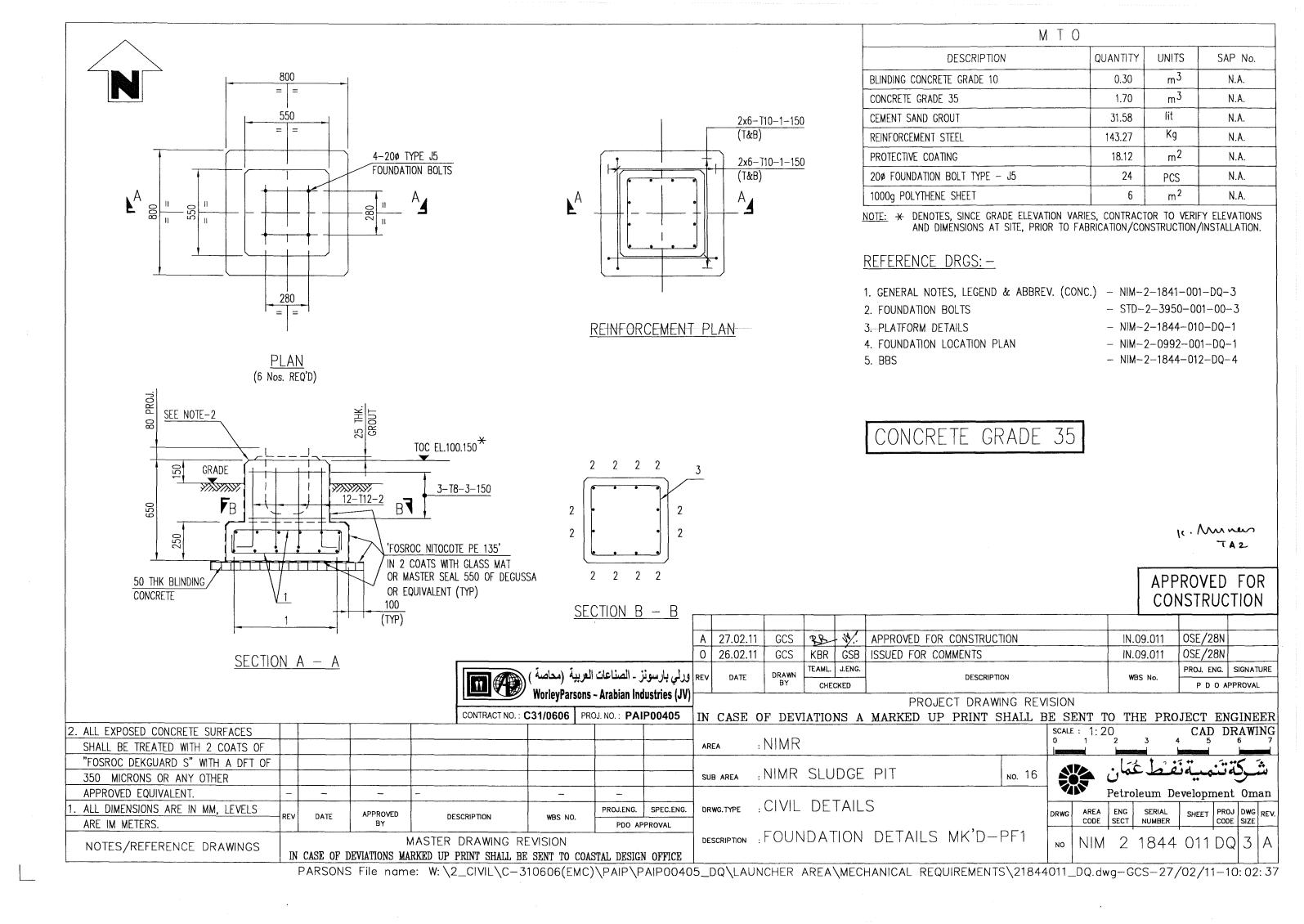
This schedule complies with BS 8666: 2005

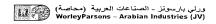
All dimensions are in mm

Refer to Bar shape Code drawing

\* Specified in multiples of 5 mm







JOB NO.:

PAIP00238

Document No.: NIM-2-1844-012-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEMS

Revision No.: A Prepared by:

GCS

PLATFORM-P1&P2

Checked by:

PNG

REF. DWG NO.: NIM-2-1844-011-DQ-3

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		35.55	133.20	52.20				
Weight (Kgs)		14.22	82.59	46.46				
Total Weight (Kgs	)							143.270

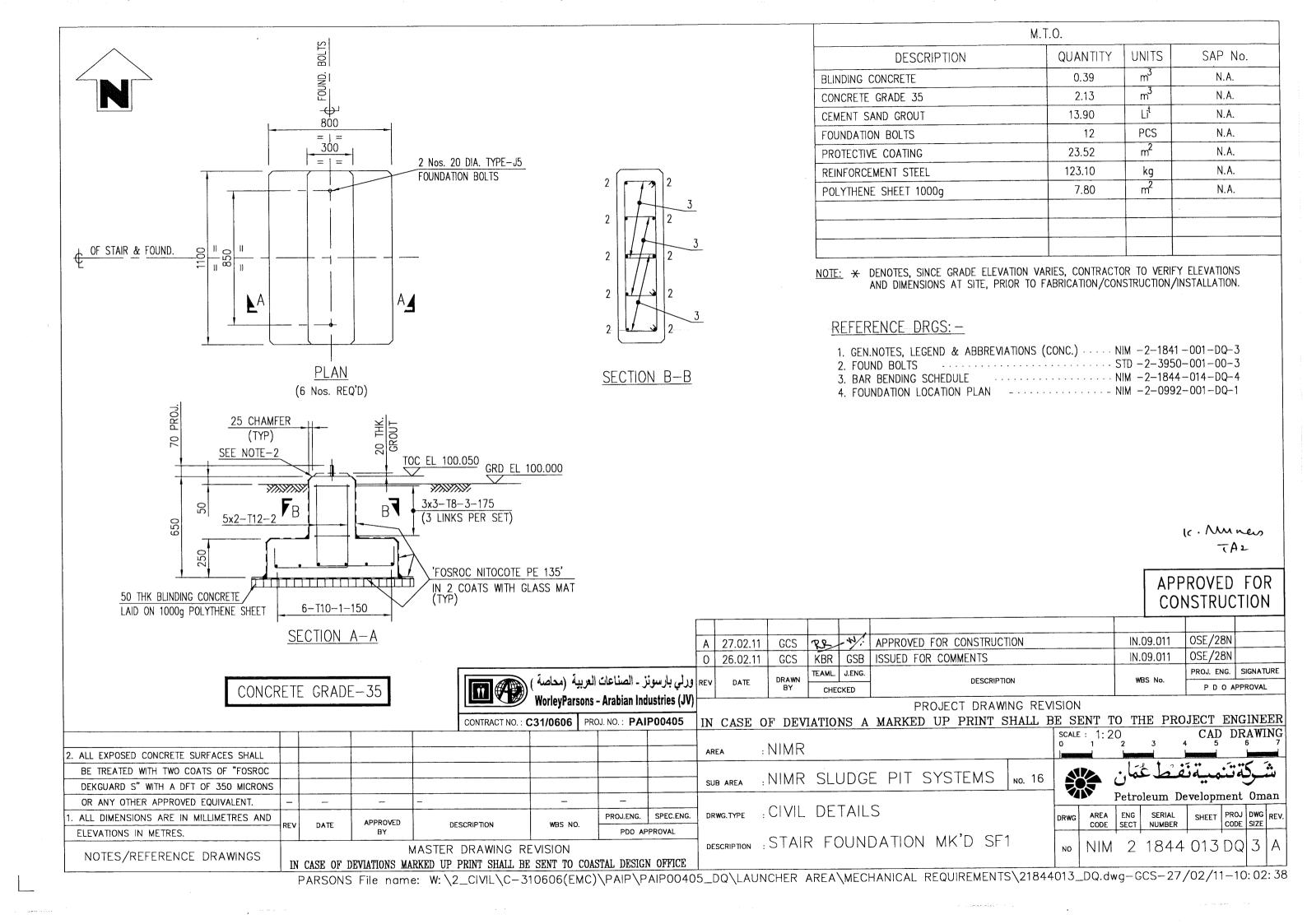
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	В*	C.	D,	E/R*
PLATFORM	1	T10	6	24	144	925	21	125	700	125		
FDN. PF1	2	T12	6	12	72	725	11	200	530			
	3	Т8	6	3	18	1975	51	450	450			
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This schedule complies with BS 8666: 2005

All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm





JOB NO.: PART ID.: PAIP00238

NIMR SLUDGE PIT SYSTEMS

STAIR FOUNDATION

Document No.: NIM-2-1844-014-DQ-4

Revision No.:

^

Prepared by: Checked by: GCS PNG

Date:

27.02.11

REF. DWG NO.: NIM-2-1844-013-DQ-3

Total MTO for Rebars.

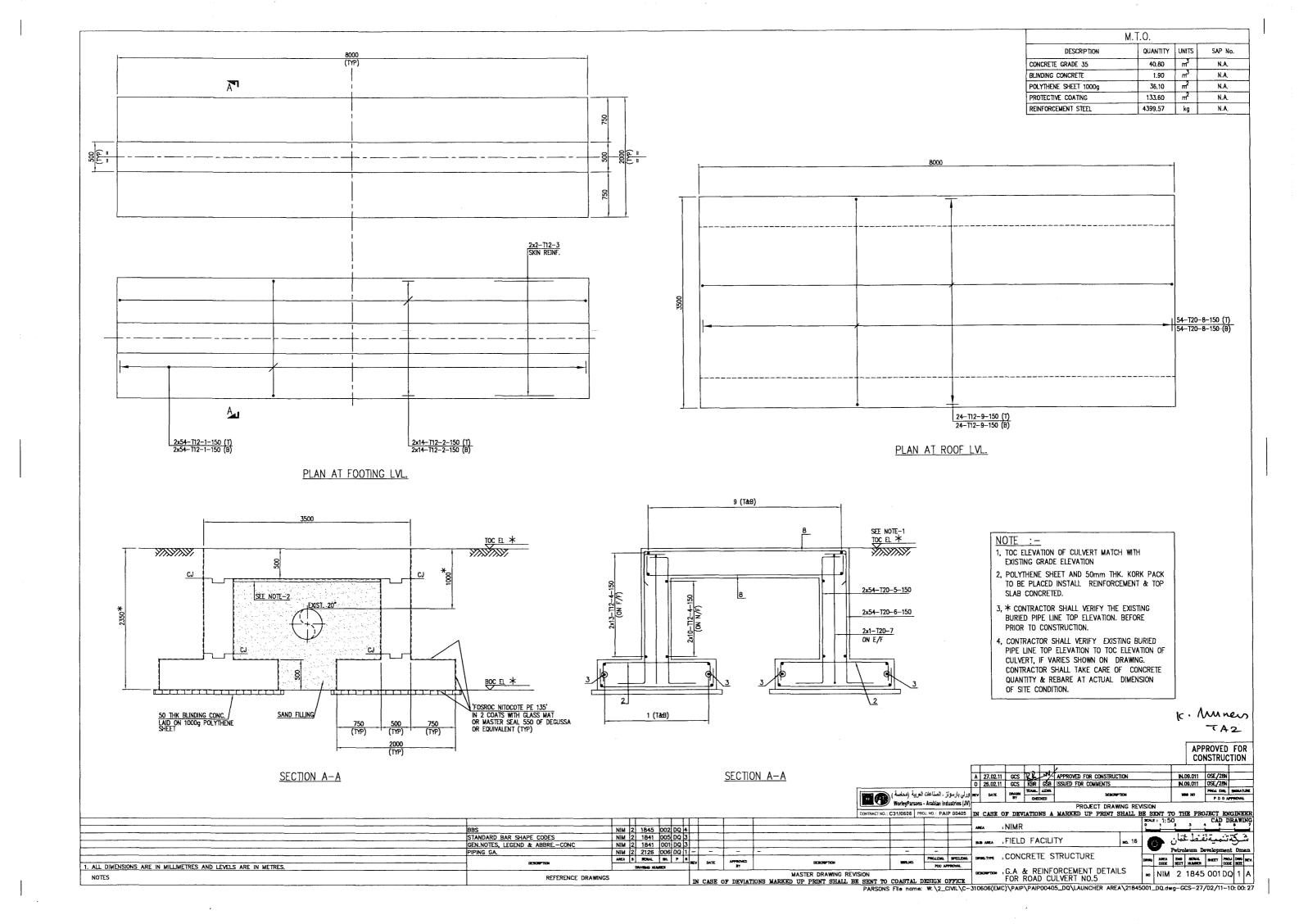
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		86.40	45.90	67.50				
Weight (Kgs)		34.56	28.46	60.08				
Total Weight (Kgs)	)		· · · · · · · · · · · · · · · · · · ·					123.100

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Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A <sup>*</sup>	В,	C*	D,	E/R*
STAIR	1	T10	6	6	36	1275	21	150	1000	150		
FOUNDATION	2	T12	6	10	60	1125	21	150	450	550		
	3	Т8	6	9	54	1600	51	520	200			Was in
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Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm





JOB NO.: PART ID.: PA1P00405

FIELD FACILITY

**CULVERT NO. 5** 

Document No.: NIM-2-1845-002-DQ-4

Revision No.: A

Prepared by: Checked by:

GCS PNG R

Date:

27.02.11

REF. DWG NO.: NIM-2-1845-001-DQ-1

Total MTO for Rebars.

Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)				1897.45		1097.50		
Weight (Kgs)				1688.74		2710.83		
Total Weight (Kgs)	)							4399,570

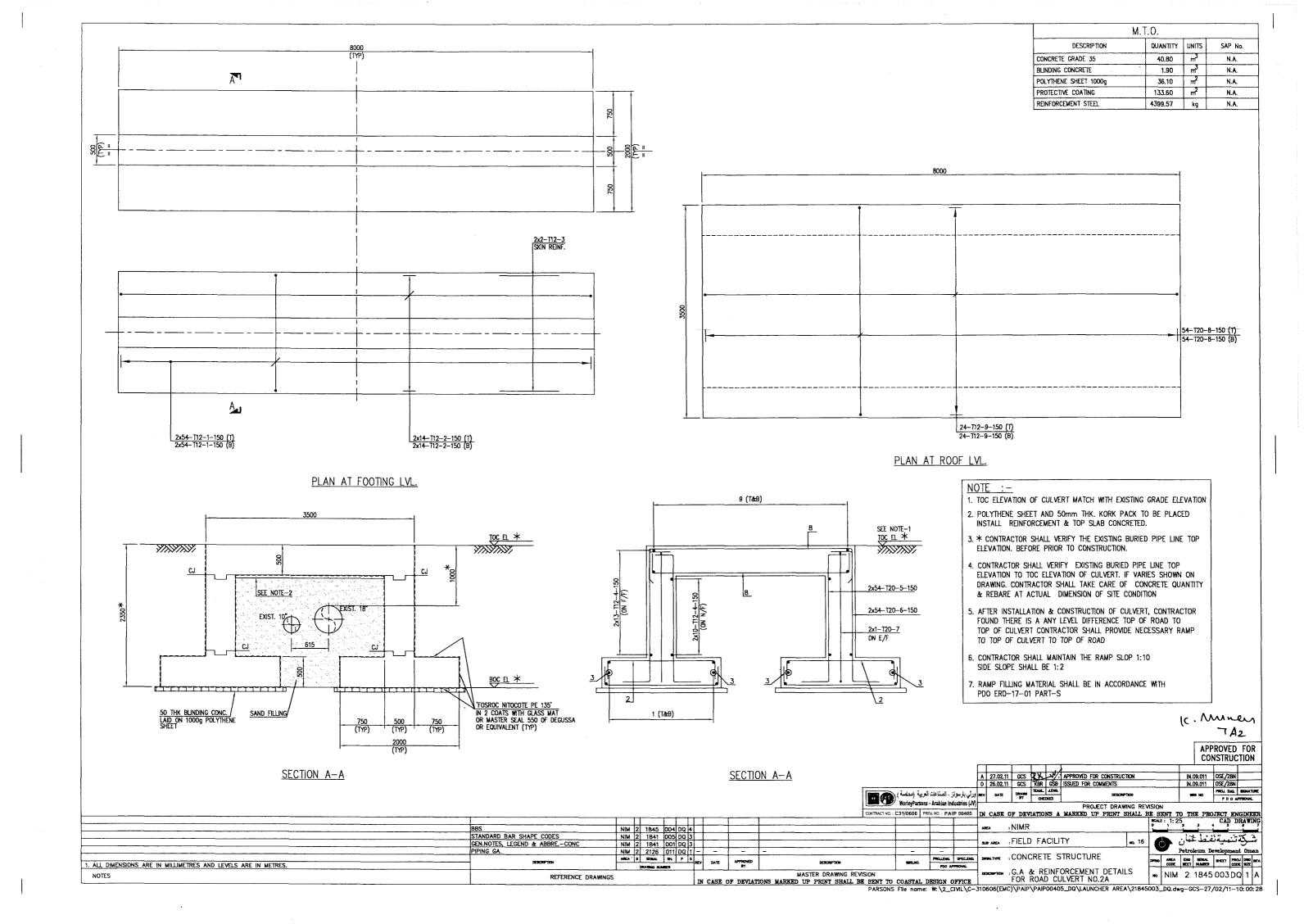
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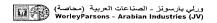
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	$\mathbf{A}^{\star}$	B*	C,	D,	E/R*
CULVERT NO. 5	1	T12	1	216	216	2625	21	375	1900	375		
	2	T12	1	56	56	8625	21	375	7900	375		
	3	T12	1	4	4	10350	21	1250	7875	1250		
	4	T12	1	46	46	8575	23	350	7900	350		180) 1 - 1 - 1
	5	T20	1	108	108	3025	23	350	2185	600		
	6	T20	1	108	108	3025	23	350	2185	600		
	7	T20	1	4	4	3025	21	350	2185	600		
	8	T20	1	108	108	4000	21	350	3400	350		3-1-1-
	9	T12	1	48	48	8575	21	350	7900	350		
												A Commission of the Commission
			1									

All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm





JOB NO.:

PAIP00405

REF. DWG NO.: NIM-2-1845-003-DQ-1

PART ID.:

FIELD FACILITY

**CULVERT NO. 2A** 

Document No.: NIM-2-1845-004-DQ-4

Revision No.: A

GCS

Prepared by: Checked by:

PNG P

Date:

27.02.11

Total MTO for Rebars.

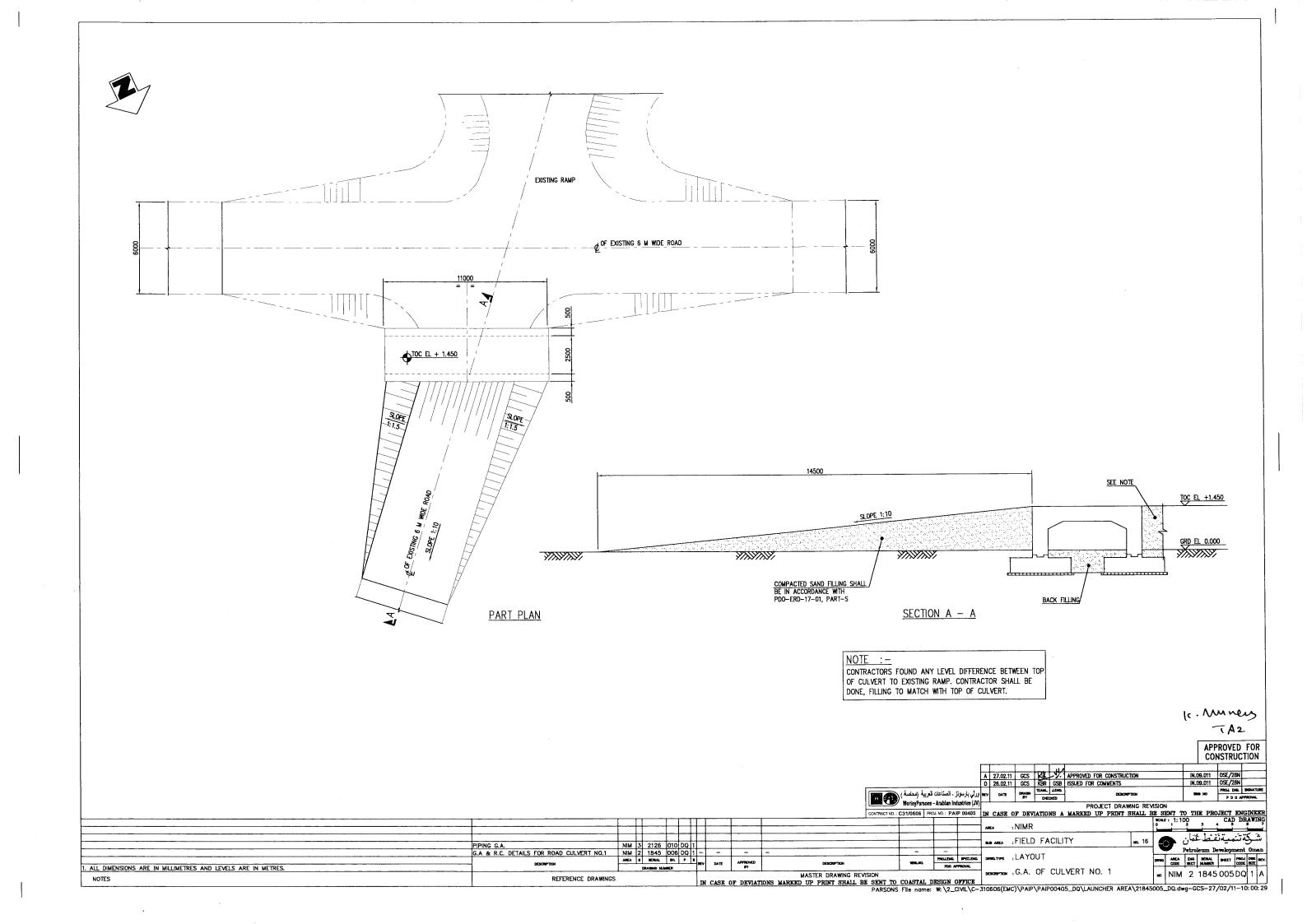
Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)				1897.45		1097.50		
Weight (Kgs)				1688,74		2710.83		
Total Weight (Kgs)	)							4399.570

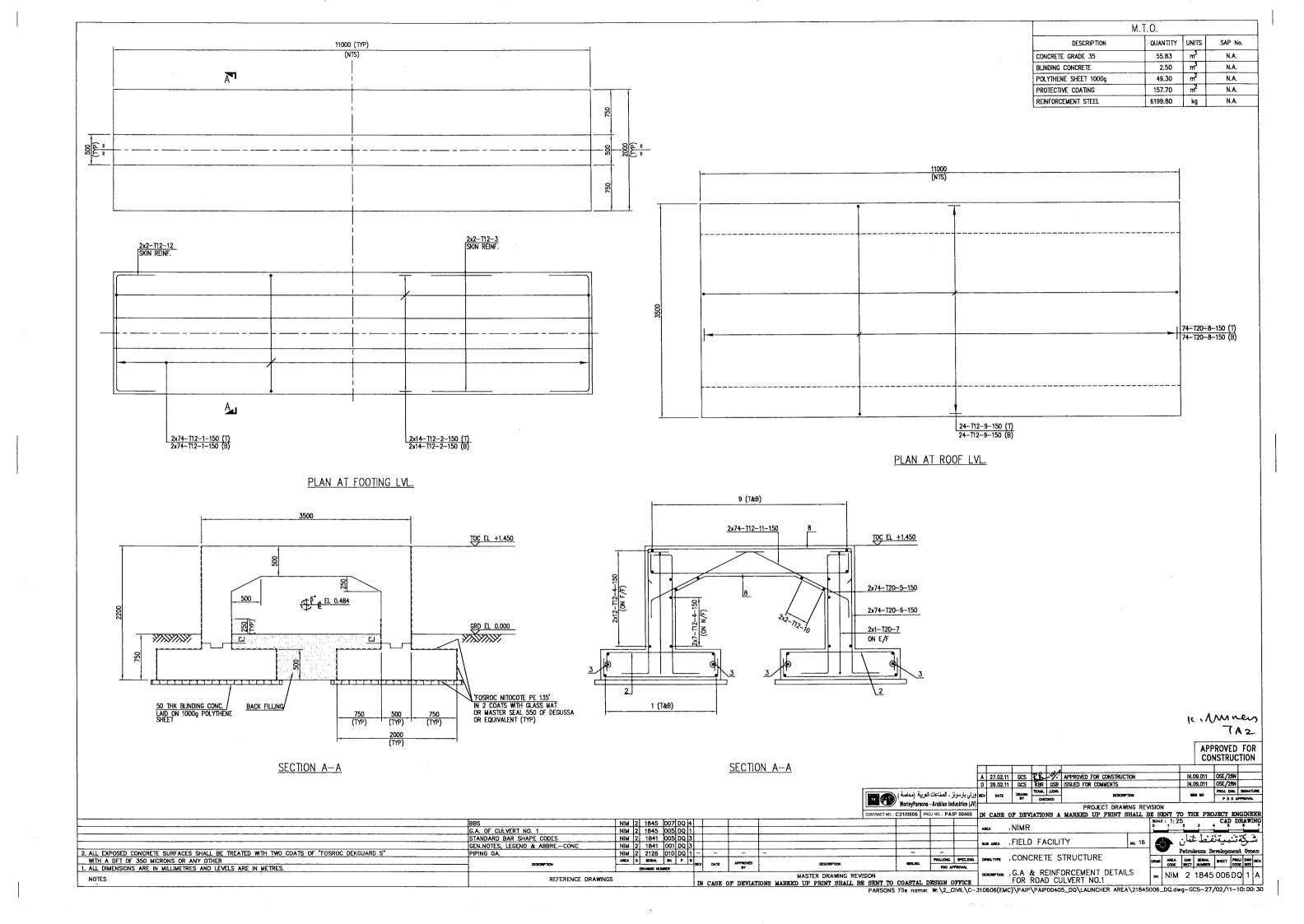
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar †	Shape code	A*	B,	C,	D,	E/R*
CULVERT NO. 2A	1	T12	1	216	216	2625	21	375	1900	375		
755 Av. of 760000	2	T12	1	56	56	8625	21	375	7900	375		
	3	T12	1	4	4	10350	21	1250	7875	1250		
	4	T12	1	46	46	8575	23	350	7900	350		
	5	T20	1	108	108	3025	23	350	2185	600		
	6	T20	1	108	108	3025	23	350	2185	600		1, 19 t 1, 18 t   §
	7	T20	1	4	4	3025	21	350	2185	600		
	8	T20	1	108	108	4000	21	350	3400	350		
	9	T12	1	48	48	8575	21	350	7900	350		
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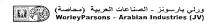
All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm







JOB NO.:

PA1P00405

PART ID.:

FIELD FACILITY

CULVERT NO. 1

Document No.: NIM-2-1845-007-DQ-4

Revision No.: A

Prepared by: Checked by: GCS PNG BE

Date:

27.02.11

REF. DWG NO.: NIM-2-1845-006-DQ-1

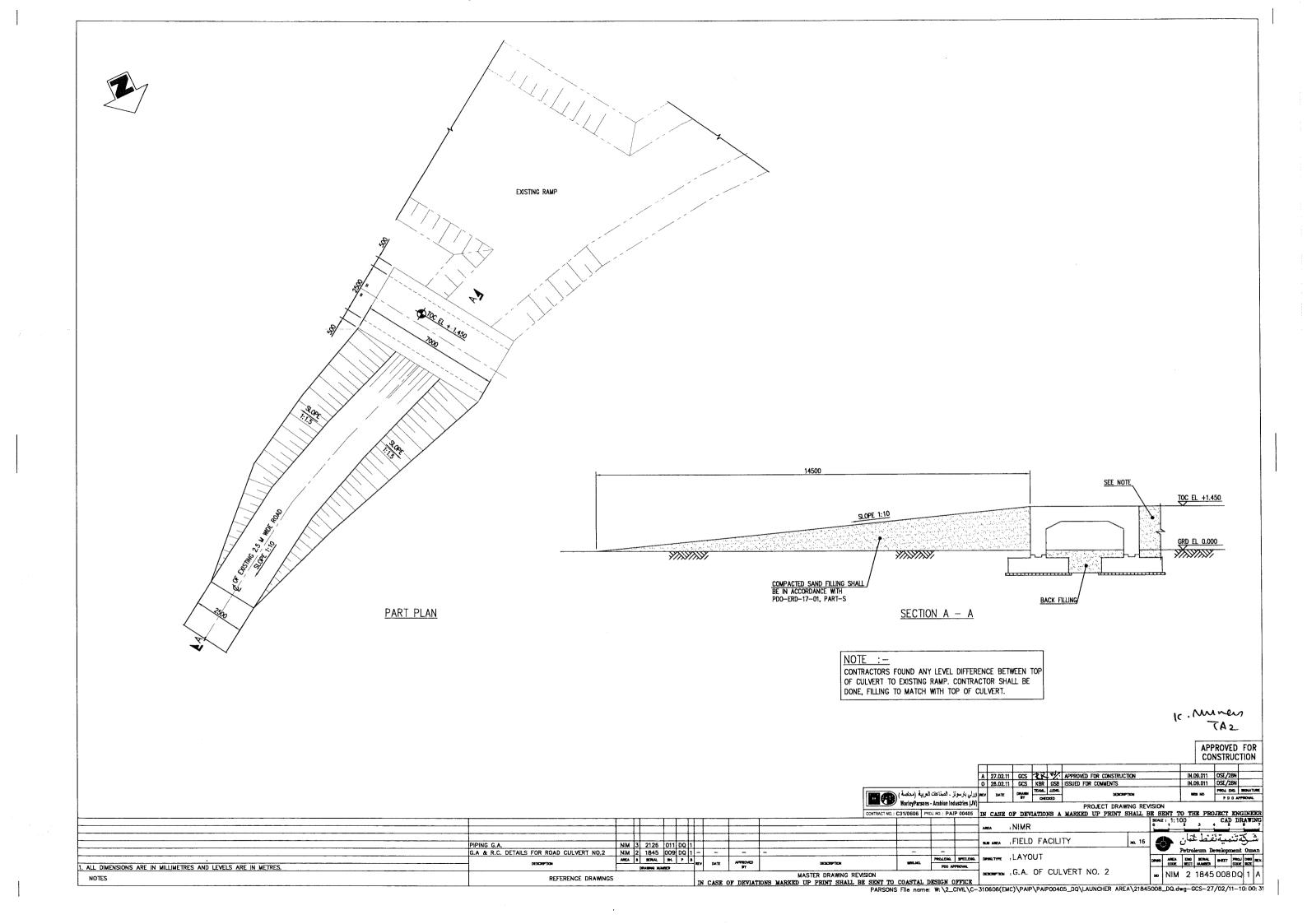
Total MTO for Rebars.

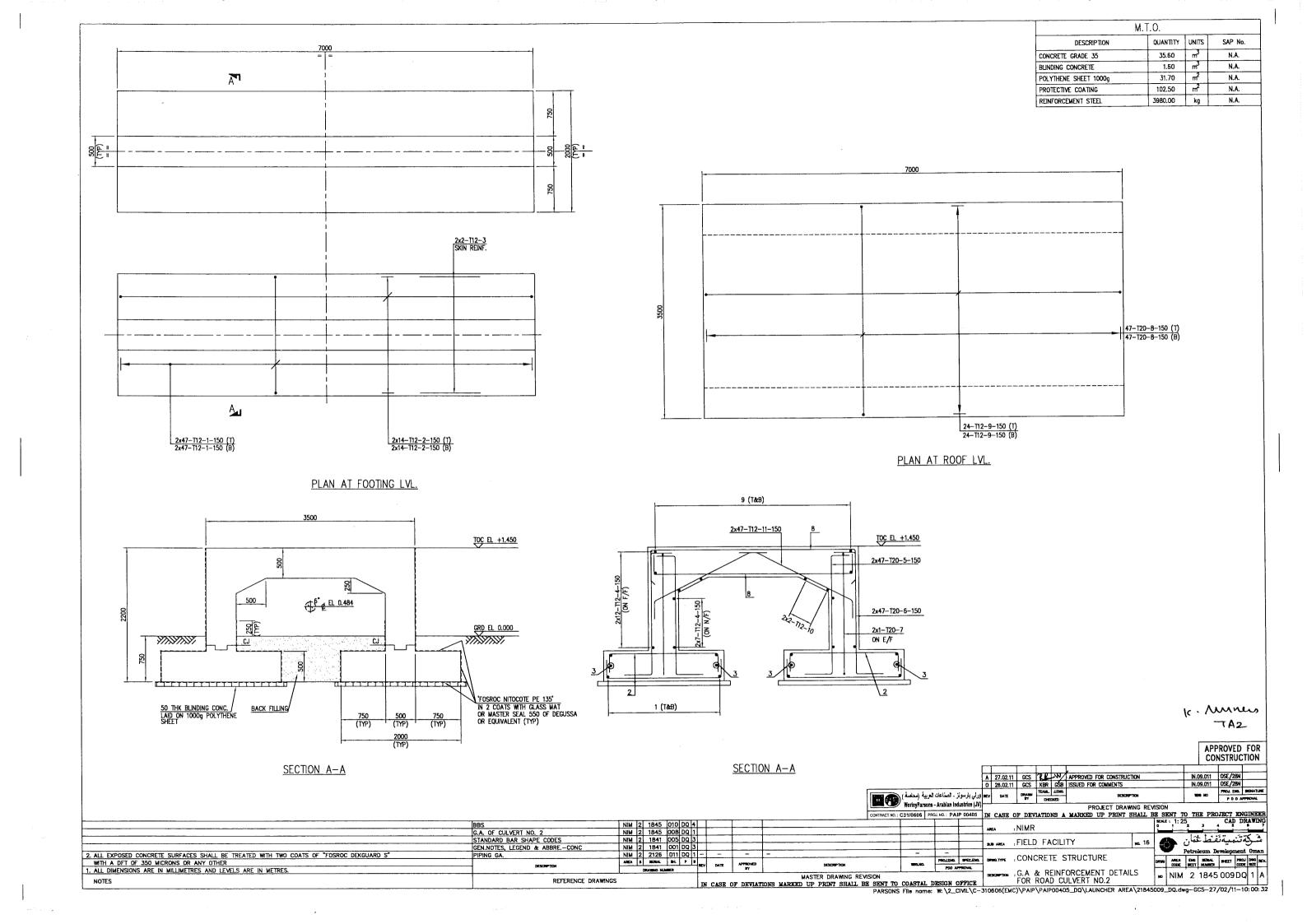
Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)				2887.75		1469.50		
Weight (Kgs)				2570.10		3629.67		
Total Weight (Kgs)	)	_						6199.770

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B⁺	C*	D.	E/R*
CULVERT NO. 1	1	T12	1	296	296	2625	21	375	1900	375		
	2	T12	1	56	56	11625	21	375	10900	375		
	3	T12	1	4	4	10875	00	10875				
	4	T12	1	38	38	11575	23	350	10900	350		
	5	T20	1	148	148	2925	23	350	2075	600		
	6	T20	1	148	148	2925	23	350	2075	600		11.5
	7	T20	1	4	4	2925	21	350	2075	600		
	8	T20	1	148	148	4000	21	350	3400	350		
	9	T12	1	48	48	11575	21	350	10900	350		
	10	T12	]	4	4	11375	21	250	10900	250		
	11	T12	]	148	148	2450	24	300	1835	300	821	
	12	T12	1	4	4	3175	21	650	1900	650		
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<sup>\*</sup> Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm







JOB NO.:

PAIP00405

REF. DWG NO.: NIM-2-1845-009-DQ-1

PART ID.:

FIELD FACILITY

**CULVERT NO. 2** 

Document No.: NIM-2-1845-010-DQ-4

Revision No.:

Α GCS

Prepared by: Checked by:

PNG PS

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)				1869.15		937.60		
Weight (Kgs)				1663.55		2315.88		
Total Weight (Kgs)	)							3979.430

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar †	Shape code	A <sup>*</sup>	B*	C,	D,	E/R*
CULVERT NO. 2	1	T12	1	188	188	2625	21	375	1900	375		
	2	T12	1	56	56	7625	21	375	6900	375		
	3	T12	1	4	4	9350	21	1250	6875	1250		
	4	T12	1	38	38	7575	23	350	6900	350		
	5	T20	1	94	94	2925	23	350	2075	600		
	6	T20	1	94	94	2925	23	350	2075	600		
	7	T20	1	4	4	2925	21	350	2075	600		
	8	T20	1	94	94	4000	21	350	3400	350	N. E. A.	
	9	T12	1	48	48	7575	21	350	6900	350		
	10	T12	1	4	4	7375	21	250	6900	250		
	11	T12	1	94	94	2450	24	300	1835	300	821	
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All dimensions are in mm

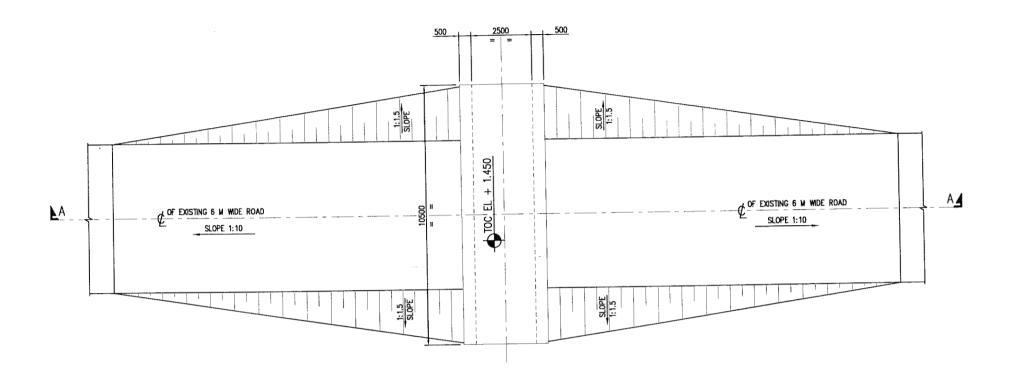
Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm



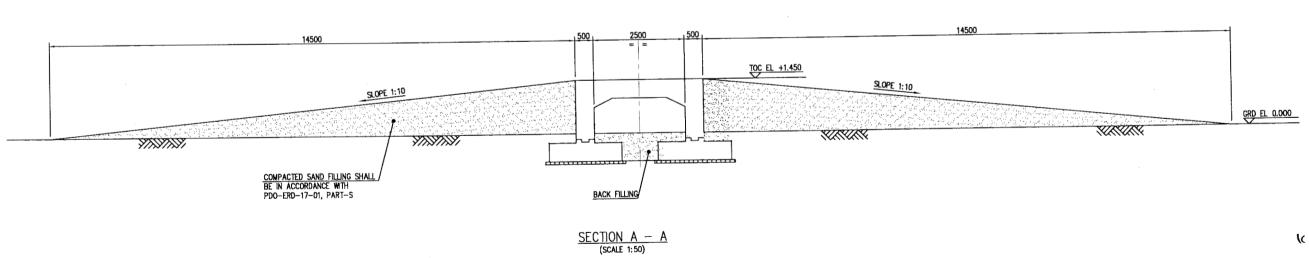
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN METRES.

NOTES



PART PLAN (2 Nos. REQ'D)

REFERENCE DRAWINGS



DATE

1. Muneus TA2 APPROVED FOR CONSTRUCTION A 27.02.11 GCS V ANY APPROVED FOR CONSTRUCTION

0 28.02.11 GCS KBR GSB ISSUED FOR COMMENTS

TAMA. LIDIA

WorleyParsons - Arabian Industries (N)

CONTRACT NO.: C3170606 FROM NO.: DATA GASTATION IN.09.011 OSE/28N
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IN.09.011 OSE/28N TRACT NO.: C31/0606 PROJ. NO.: PAIP 08405 IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER.

CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER.

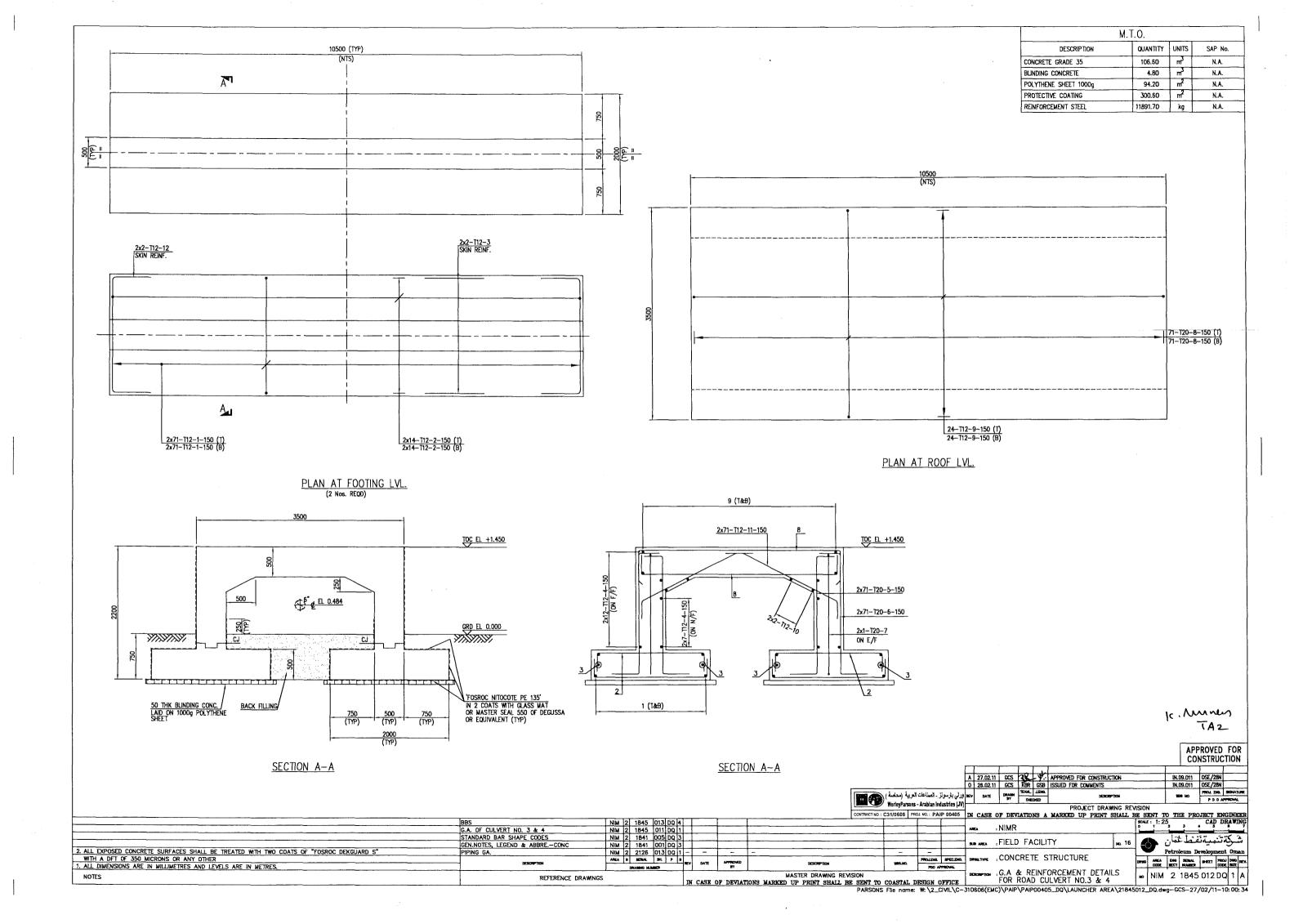
CAD DRAWING

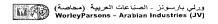
CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER. :NIMR FIELD FACILITY MASTER DRAWING REVISION

MASTER DRAWING REVISION

IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\LAUNCHER AREA\21845011\_DQ.dwg-GCS-27/02/11-10:00:33 м NIM 2 1845 011 DQ 1 A





JOB NO.:

PAIP00405

REF. DWG NO.: NIM-2-1845-012-DQ-1

PART ID.:

FIELD FACILITY

CULVERT NO. 3 & 4

Document No.: NIM-2-1845-013-DQ-4

Revision No.:

Α

Prepared by: Checked by: GCS

Date:

PNG PP 27.02.11

Total MTO for Rebars.

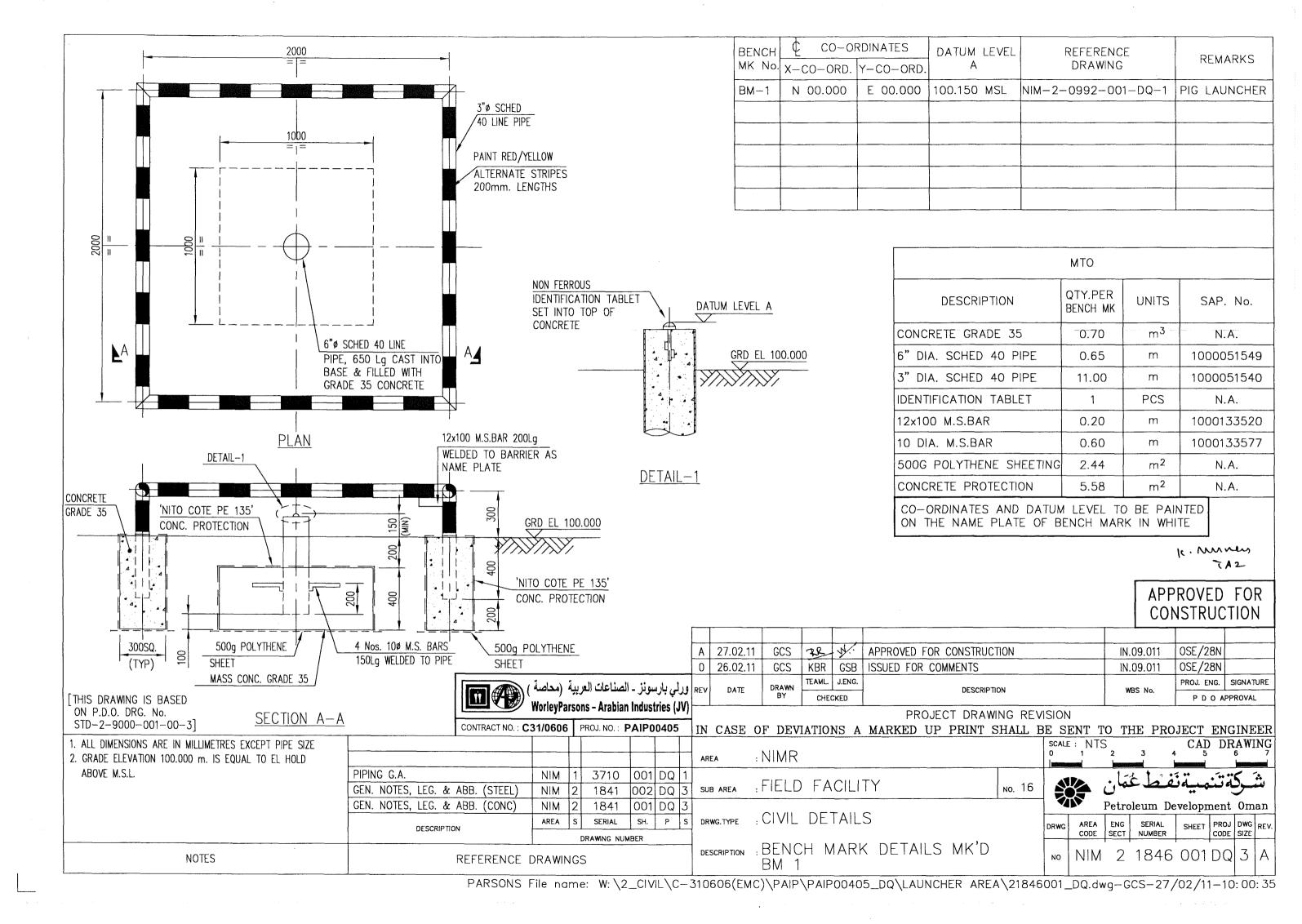
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)				5532.90		2820.80		
Weight (Kgs)				4924.29		6967.38		
Total Weight (Kgs)	)							11891.670

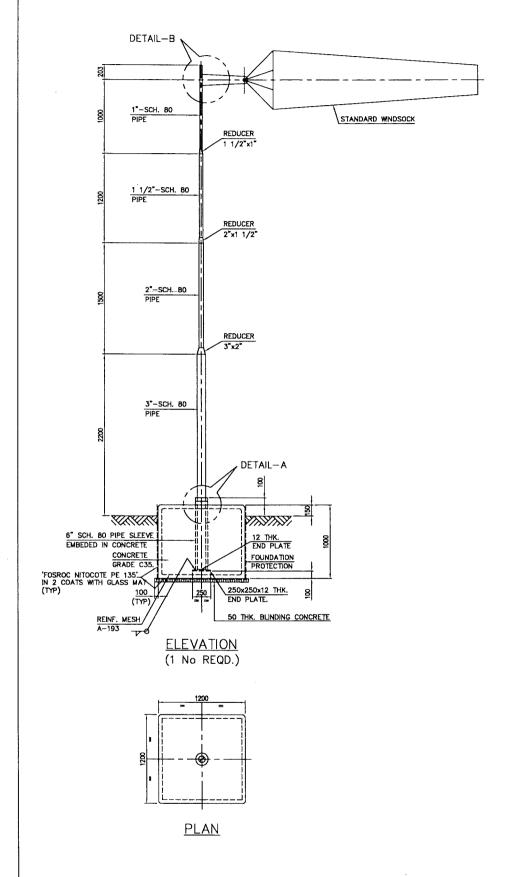
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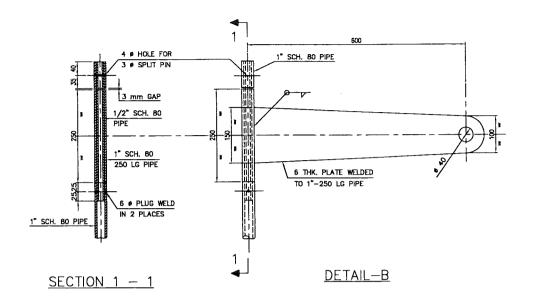
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A.	B*	C,	D.	E/R*
CULVERT NO. 3 & 4	1	T12	2	284	568	2625	21	375	1900	375		
	2	T12	2	56	112	11125	21	375	10400	375		
	3	T12	2	4	8	10375	00	10375				
	4	T12	2	38	76	11075	23	350	10400	350		
	5	T20	2	142	284	2925	23	350	2075	600		
	6	T20	2	142	284	2925	23	350	2075	600		
	7	T20	2	4	8	2925	21	350	2075	600		
	8	T20	2	142	284	4000	21	350	3400	350		
	9	T12	2	48	96	11075	21	350	10400	350		
	10	T12	2	4	8	10875	21	250	10400	250		
	11	T12	2	142	284	2450	24	300	1835	300	821	
	12	T12	2	4	8	3150	21	650	1875	650		
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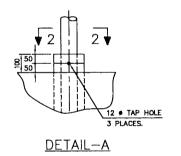
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

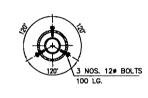
<sup>†</sup> Specified in multiples of 25 mm









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SECTION 2 - 2

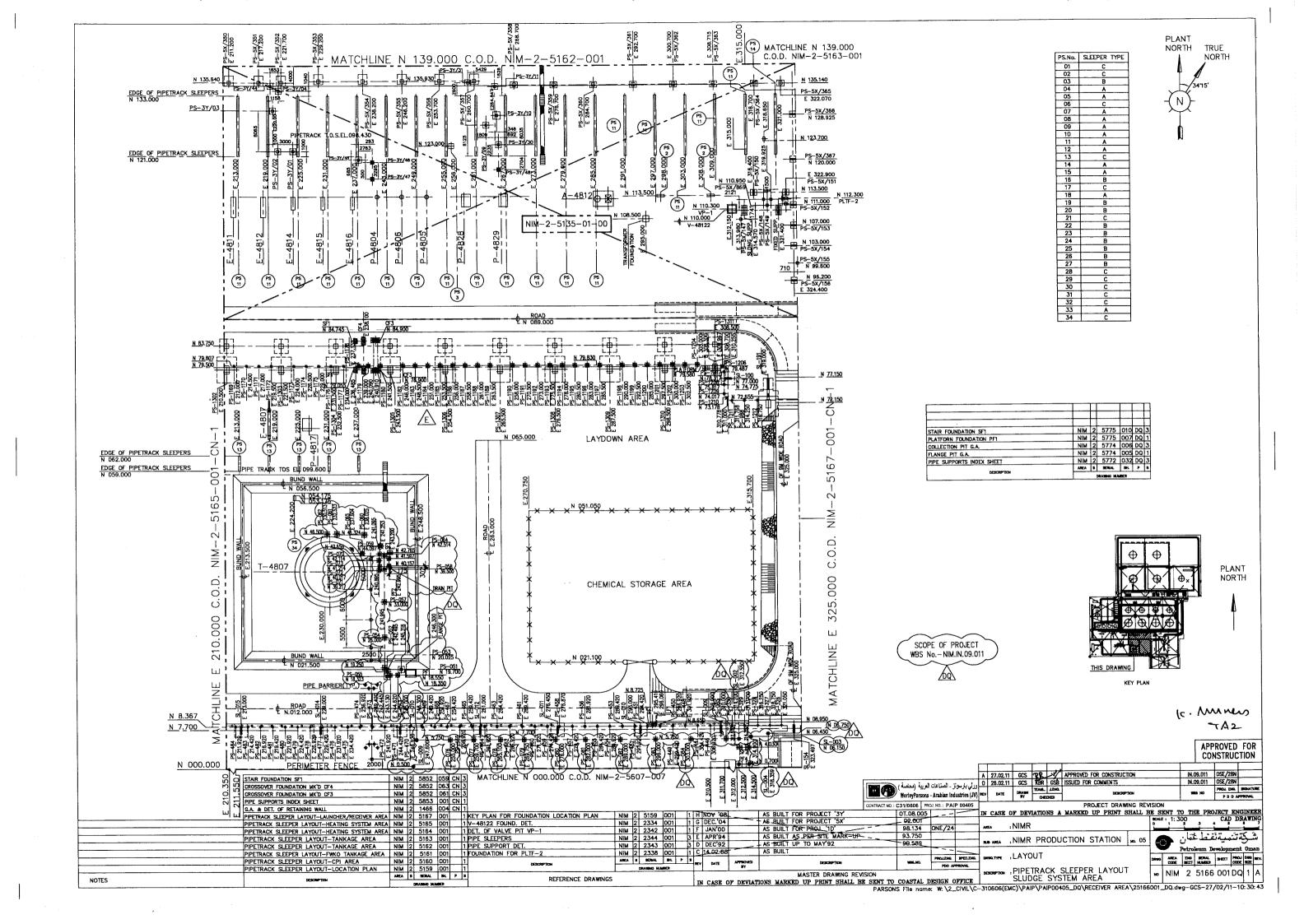
M.T.O.										
DESCRIPTION	QUANTITY	UNITS	SAP No.							
CONCRETE GRADE 35	1.50	m <sup>3</sup>	Ń.A.							
BLINDING CONCRETE	0.10	m <sup>3</sup>	N.A.							
PROTECTIVE COATING	6.80	m <sup>2</sup>	N.A.							
A 193 MESH FABRIC	6.50	m <sup>2</sup>	1000062697							
3" PIPE SCHEDULE 80	3.10	m	1000051542							
6" PIPE SCHEDULE 80	1.00	m	1000051551							
2" PIPE SCHEDULE BO	1.50	m	1000051538							
1-1/2" PIPE SCHEDULE 80	1.20	m	1000051534							
1" PIPE SCHEDULE BO	1.20	m	1000051531							
1/2" PIPE SCH.80	0.40	m	1000051525							
6 THK PLATE	0.10	m <sup>2</sup>	1000062606							
12 THK PLATE	0.06	m <sup>2</sup>	1000062609							
REDUCER-1 1/2"x1"	1 No.	-	1000053063							
REDUCER-2"x1 1/2"	1 No.	T -	1000053073							
REDUCER-3"x2"	1 No.	T -	1000053081							
SPLIT PIN 3mm #	1 No.	-	NA							
M12-100 LG BOLTS	6 Nos.	T -	NA							
WINDSOCK	1 No.	Pcs.	1000468729							

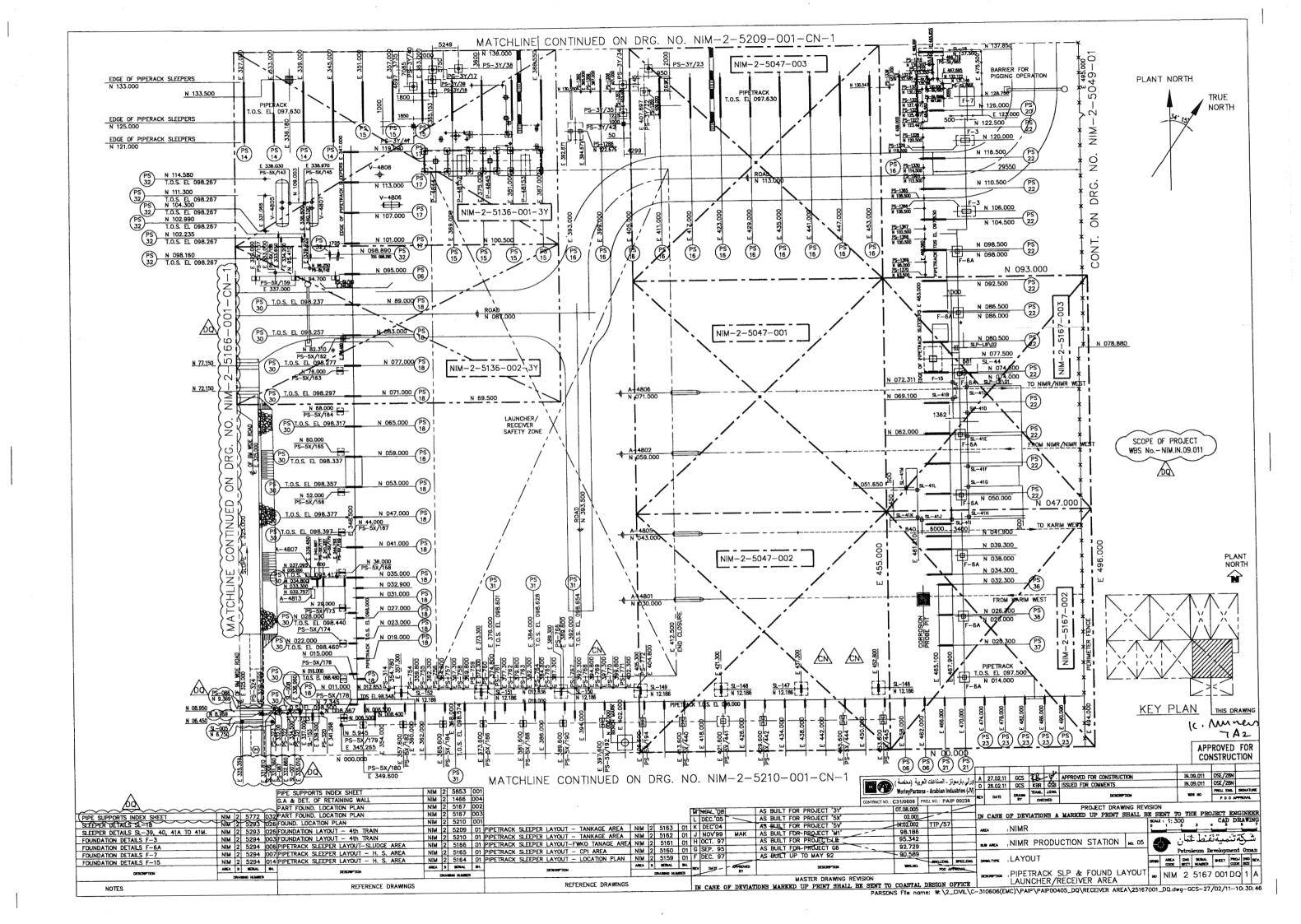
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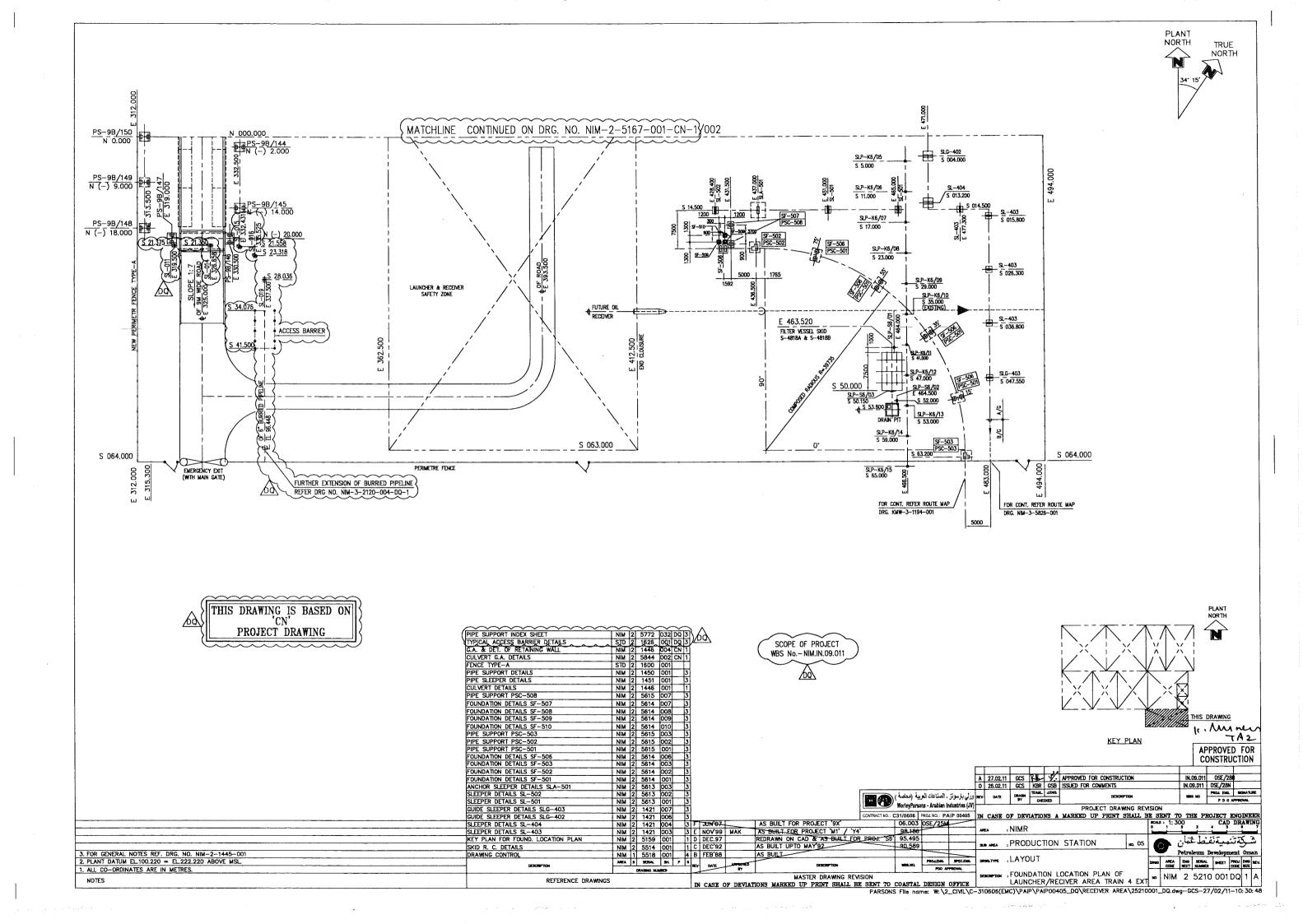
APPROVED FOR CONSTRUCTION

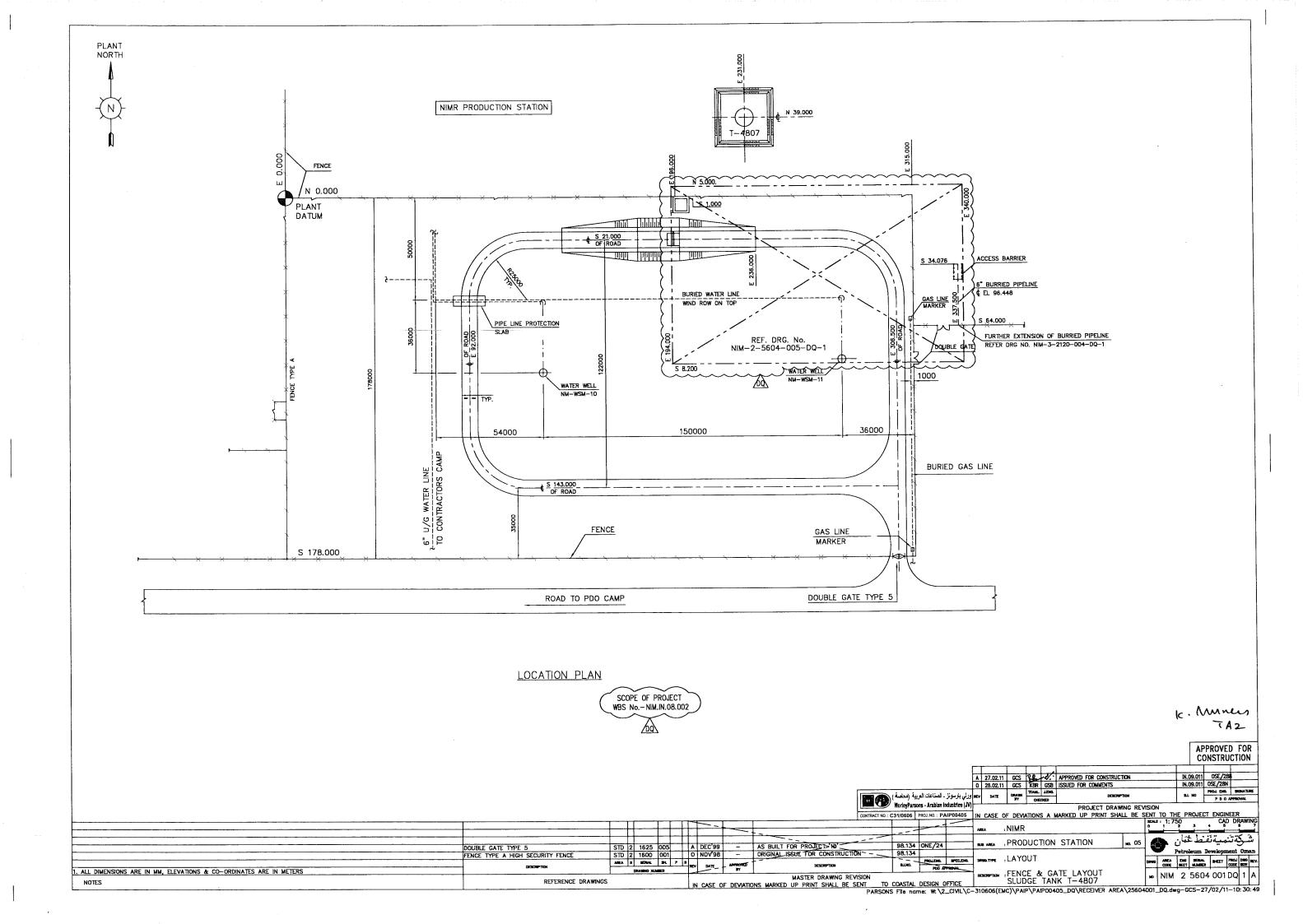
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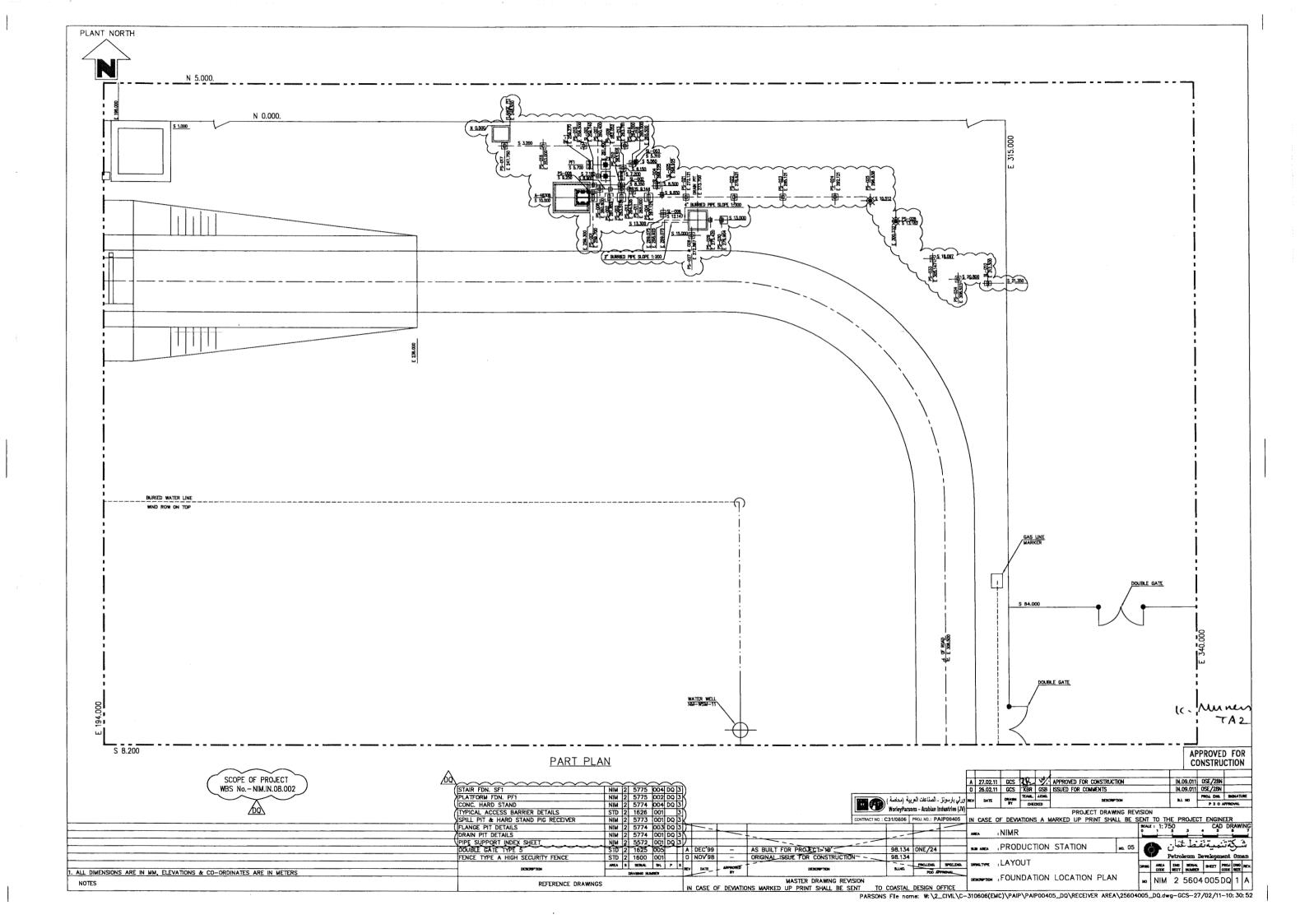
NOTES	DEFEDENCE DE AMANGE			п	MASTER DRAWING REVISION IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE						NIM 2 1846 002 DQ 1 A			
ALL WELDING IS 6 THK.CONT.FILLET UNLESS OTHERWISE SPECIFIED				DRAWING HUMBER		377		377		L	PDG APPROVAL	_	.WINDSOCK DETAILS	CALL SECTIONS OF THE SECTION OF THE
STEELWORK/PIPEWORK TO BE PAINTED TO SP-1246-2 PCS-1 FINISH COLOUR WHITE	DESCRIPTION		BENAL	9H. P	· [8]_	DATE	APPROVED	DESCRIPTION		1895.140.	PROLEMA SPEED	DITHOLTYPE	CIVIL DETAILS	DRING AREA ENG SERIAL SHEET PROJ DRIG REV
ALL EDGES SHALL HAVE A CHAMFER OF APPROX. 25mm	GENERAL NOTES & ABBREVATIONS (CONCRETE)	NIM 2	1841	001 DC	Q  3		-	<u> </u>				_	.CIVIL DETAILS	Petroleum Development Oman
ALL EXPOSED CONCRETE SURFACE SHALL BE TREATED WITH 2 COATS OF "FOSROC DEKGUARD S" WITH A DFT OF 350 MICRONS	GENERAL NOTES & ABBREVATIONS (STEEL)	NIM 2	1841	002 DC	Q 3							SUB AREA	:TILLD TAGILITY	Max 10   10   10   10   10   10   10   10
GRADE ELEVATION 100.000 m. IS EQUAL TO EL HOLD ABOVE M.S.L.	FOUNDATION LOCATION PLAN	NIM 2	0992	001 DC	Q 1					ļ			FIELD FACILITY	شكة تنمية نفيط غمان 🚗 🏿 ء ر
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#### 1.0 GENERAL NOTES

- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH CONSTRUCTION CONTRACT AND / OR CIVIL AND BUILDING CONSTRUCTION SPECIFICATIONS SP-1279 AND GUIDE TO CONCRETE CONSTRUCTION SP-1282.
- 1.2 ALL DIMENSIONS ARE IN MILLIMETERS EXCEPT FOR PIPE SIZES WHICH ARE SHOWN IN INCHES.
- 1.3 ALL ELEVATIONS ARE IN METERS AND RELATED TO DATUM ELEVATION OF 100.000

#### 2.0 EXCAVATION, TRENCHING AND BACKFILL

BACKFILL FOR FOUNDATIONS, WALLS, TRENCHES AND SITE GRADING SHALL BE PLACED IN EVEN LAYERS (SUCH THAT COMPACTED THICKNESS DOES NOT EXCEED 150mm) AND THE FULL WIDTH OF THE FORMATION. THE FILL SHALL BE GRADED AS SHOWN BELOW.

BS SEIVE SIZE	% PASSING BY WEIGHT
50.00 mm	100%
9.50 mm	60%-100%
5.00 mm	50%-85%
2.00 mm	40%-70%
425 .4m	25%-45%
75 4m	B%-15%

ALL FILL MATERIAL INCLUDING SUBGRADE AND VERGES SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY OBTAINED IN THE MODIFIED AASHTO COMPACTION TEST.

- 2.2 ALL UNDERGROUND CABLES EXCEPT EARTHING CABLES SHALL BE LAID AT A MINIMUM DEPTH OF 600mm.
- INSTRUMENTATION CABLES SHALL NOT BE LAID IN THE SAME TRENCH WITH POWER AND LIGHTING CABLES.
- ALL BURIED CABLES SHALL BE LAID IN SUCH A WAY THAT THE FILLING MATERIAL WITHIN 100mm FROM THE CABLES SHALL BE FREE OF STONES OR OTHER MATERIALS WHICH MAY DAMAGE THE CABLES. SUITABLE FILL, SUCH AS CLEAN SMALL-GRAINED SAND SHALL BE USED FOR THIS PURPOSE. THE CABLES SHALL BE PROTECTED BY SUITABLE SLABS OR TILES WHICH SHALL FORM A CONTINUOUS BUT REMOVABLE COVERING 200mm ABOVE THE HIGHEST CARLE.
- WHERE CROSSING OF INSTRUMENTATION WITH POWER AND LIGHTING CABLES IS UNAVOIDABLE, INSTRUMENTATION CABLE SHALL BE LAID ABOVE AND SHALL BE KEPT AT A MINIMUM DISTANCE OF 750mm FROM POWER AND LIGHTING CABLES.

#### 3.0 FOUNDATION WORKS

- 3.1 THE FOUNDATIONS FOR BUILDINGS, EQUIPMENT, STEEL STRUCTURES AND PIPE SUPPORTS WHEREVER SPECIFIED ON DRAWINGS SHALL BE LAID ON 2 COATS OF FOSROC'S 'NITOCOTE PE 135' GLASS MAT SPREAD OVER BLINDING CONCRETE. THE SIDES AND TOP OF CONCRETE FOUNDATION IN CONTACT WITH SOIL AND UPTO 250mm ABOVE GRADE SHALL BE APPLIED WITH FOSROC'S 'NITOCOTE PE 135' IN 2 COATS WITH EACH COAT MEASURING 600 MICRON THICKNESS. WHILE THE FIRST COAT IS STILL WET, APPLY 120-150 qsm GLASS MAT ON THE SURFACE AND ROLL OVER TO ENSURE THE MAT IS FULLY EMBEDDED, MASTER SEAL 550 MANUFACTURED BY DEGUSSA OR ANY OTHER PDO APPROVED EQUIVALENT IN PLACE OF 5.1 'NITOCOTE PE 135'. APPLICATION SHALL BE AS PER RESPECTIVE MANUFACTURER'S INSTRUCTIONS.
- 3.2 BEFORE POURING CONCRETE, THE FIELD SHALL MAKE PROVISION FOR THE INSTALLATION OF ALL UNDERGROUND SERVICES AFFECTED BY THE FOUNDATIONS.
- 3.3 BEFORE CASTING FOUNDATIONS, ANY IMMEDIATE OR ADJACENT AREAS OF DISTURBED OR SOFT SOIL MUST BE REMOVED AND REPLACED WITH MASS CONCRETE OF GRADE 10.
- 3.4 ALL EXPOSED PORTIONS OF FOUNDATION CONCRETE AND INSIDE SURFACES OF RCC PITS, WHEREVER NOT SPECIFICALLY SPECIFIED, SHALL BE COATED WITH 'FOSROC DEKGUARD S' OR EQUIVALENT.

#### 4.0 CONCRETE

- ALL CONCRETE WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH CODE OF PRACTICE FOR THE STRUCTURAL USE OF CONCRETE: BS 8110 INCLUDING ALL RELATED CODES FOR PLACING, MIXING, CURING AND TESTING.
- 4.2 A LAYER OF BLINDING CONCRETE 50mm THK SHALL BE PLACED UNDER ALL FOUNDATIONS. BLINDING CONCRETE SHALL HAVE A CHARACTERISTIC STRENGTH OF 10 N/mm<sup>2</sup> AT 28 DAYS.
- 4.3 ALL CONCRETE WITH THE EXCEPTION OF BLINDING CONCRETE SHALL OF GRADE AS SPECIFIED IN THE RESPECTIVE DETAILED DRAWINGS AND SHALL NOT BE LOWER THAN GRADE 35 CONCRETE WITH 'CORTEC MCI 2005' CORROSION INHIBITOR AT A RATE OF 0.6 lit/m3 OR EQUIVALENT. MIXING SHALL BE AS PER MANUFACTURER INSTRUCTIONS.
- 4.4 FOR ALL CONCRETE WORKS, ORDINARY PORTLAND CEMENT TO BS EN 197 SHALL BE USED, UNLESS OTHERWISE SPECIFIED. MAXIMUM FREE WATER CEMENT RATIO SHALL BE 0.45

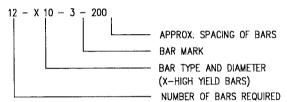
MINIMUM CEMENT CONTENT FOR 20mm AGGREGATE SHALL BE 370 kg/m3. FOR 40mm AGGREGATE SHALL BE 340 kg/m3.

- 4.5 ALL EDGES OF EXPOSED AND BURIED CONCRETE MEMBERS SHALL HAVE CHAMFER OF APPROXIMATELY 25mm.
- HOT-ROLLED DEFORMED HIGH-YIELD BARS GRADE 460 WITH A SPECIFIED CHARACTERISTIC STRENGTH OF 460 N/mm2 SHALL BE USED AS REINFORCEMENT FOR ALL CONCRETE WORKS. HOT-ROLLED MILD STEEL BARS GRADE 250 WITH A SPECIFIED CHARACTERISTIC STRENGTH OF 250 N/mm2 SHALL BE USED WHERE SPECIFIED.
- 4.7 NOMINAL COVER TO ALL REINFORCEMENT (INCLUDING LINKS) UNLESS SPECIFIED OTHERWISE SHALL BE
  - 1) FOUNDATIONS, COLUMNS, BEAMS, SLABS AND WALLS IN CONTACT 50 mm WITH SOIL OR EXPOSED TO WEATHER.
  - 2) COLUMNS, BEAMS AND WALLS NEITHER IN CONTACT WITH SOIL NOR EXPOSED TO WEATHER. - 25 mm 3) BUILDING FLOOR SLABS & ROOF SLABS
- UNLESS NOTED OTHERWISE ON THE DRAWING FOLLOWING MINIMUM

SIZE	LAP LENGTH*
T8	450
T10	550
T12	650
T16	850
T20	1050
T25	1300
T32	1650

LAP LENGTHS SHALL BE USED.

- \* SPECIFIED TO THE NEAREST 25 mm.
- LEGEND FOR REINFORCEMENT OF HOT-ROLLED MILD STEEL AND HOT ROLLED DEFORMED HIGH YIELD STRESS BARS.



### 5.0 ANCHOR BOLTS

- ALL ANCHOR BOLTS AND NUTS SHALL CONFORM TO A 307-B OR DIN 267 4.6 OR BS 970 070 M20 UNLESS SPECIFIED OTHERWISE. ALL WASHERS SHALL BE ACCORDING TO BS 4320. ALL THREADING SHALL BE ISO METRIC THREAD CONFORMING TO BS 3643.
- ALL PROJECTIONS OF HOLDING DOWN BOLTS (ANCHOR BOLTS) ARE TAKEN FROM TOP OF ROUGH CONCRETE.
- STYROPOR OR SIMILAR APPROVED MATERIAL FOR FORMING THE (ANCHOR) BOLT POCKETS SHALL BE SECURED AGAINST ANY MOVEMENT DURING CONSTRUCTION AND REMOVED AS SOON AS THE CONCRETE IS SET.

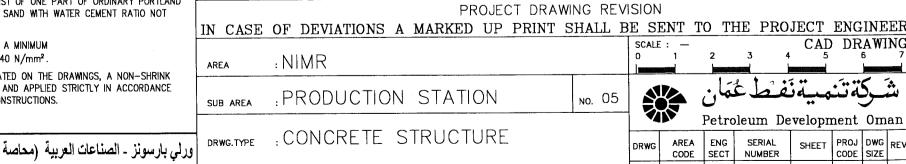
#### 6.0 GROUTING

- ALL GROUTING REQUIRES PRIOR APPROVAL BY ENGINEER BEFORE GROUTING. THE SURFACE SHALL BE CLEANED AND SOAKED WITH WATER.
- GROUT MORTAR SHALL CONSIST OF ONE PART OF ORDINARY PORTLAND CEMENT AND TWO PARTS OF SAND WITH WATER CEMENT RATIO NOT EXCEEDING 0.4.
- GROUT MORTAR SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 40 N/mm2.
- WHERE REQUIRED AND INDICATED ON THE DRAWINGS, A NON-SHRINK GROUT SHALL BE PREPARED AND APPLIED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

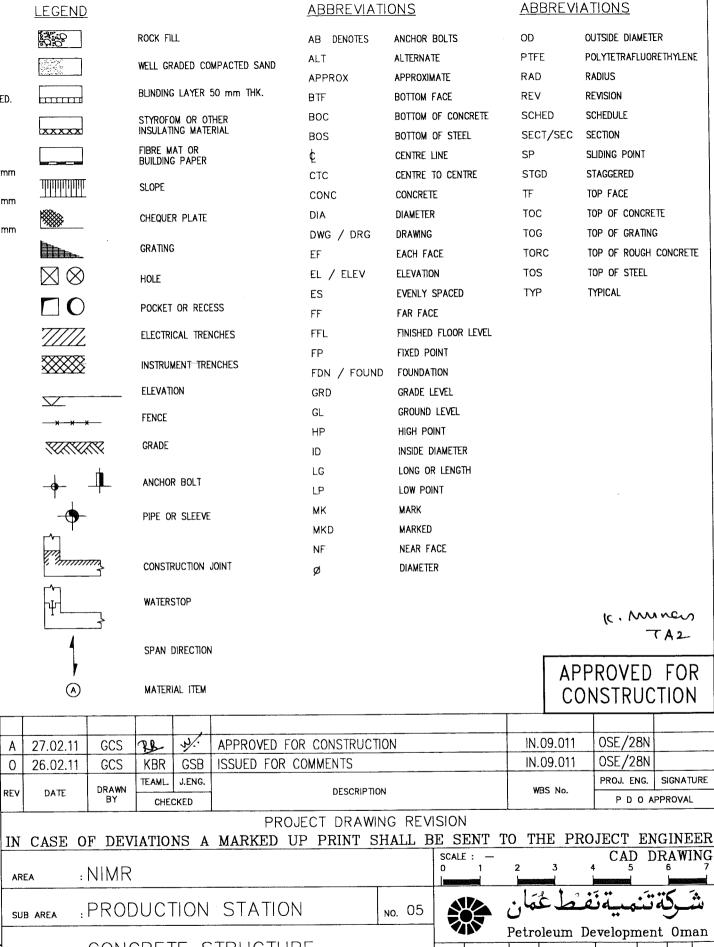
WorleyParsons - Arabian Industries (JV)

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

DESCRIPTION



NIM 2 5771 001 DQI



:GENERAL NOTES, LEGEND

AND ABBREVIATIONS

### 1.0 GENERAL NOTES

- 1.1 ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH CONSTRUCTION CONTRACT AND / OR CONSTRUCTION SPECIFICATION SP-1279.
- 1.2 ALL DIMENSIONS ARE IN MILLIMETRES EXCEPT FOR PIPE SIZES WHICH ARE SHOWN IN INCHES.
- 1.3 ALL ELEVATIONS ARE IN METERS AND RELATED TO DATUM ELEVATION OF 100,000

# 2.0 STRUCTURAL STEEL MATERIAL

- 2.1 STEEL STRUCTURE SHALL BE FABRICATED IN ACCORDANCE WITH GOOD WORKING PRACTICE, MATERIALS, WORKMANSHIP AND TESTING GENERALLY SHALL COMPLY WITH BS 5950 PART-1.2000
- 2.2 STRUCTURAL STEEL SHALL COMPLY WITH THE FOLLOWING MATERIAL REQUIRMENT, GRADE \$275 JR COMPLYING WITH BS EN 10025 PART 1 & 3.
- 2.3 STRUCTURAL STEEL SHALL COMPLY WITH THE REQUIRMENT OF BS 5950, PART-1, IN ADDITION STRUCTURAL STEEL HOT ROLLED SECTIONS SHALL COMPLY WITH THE REQUIRMENTS OF BS 4 PART-1,1993 AND PART-2,1969 AND FOR ANGLES BS EN 10056-1:1999 (METRIC DIMENSIONS), PIPES USED FOR STRUCTURAL PURPOSE SHALL COMPLY WITH ASTM A 106 GRADE B, OR AS SPECIFIED ON THE DRAWINGS.

### 3.0 BOLTING

- 3.1 BOLTS AND NUTS SHALL HAVE ISO METRIC COARSE THREAD.
- 3.2 MILD STEEL BOLTS, NUTS AND WASHERS SHALL COMPLY WITH THE REQUIREMENT OF BS 5950 PART-1.BS 4190 AND BS 4320.
- 3.3 WASHERS ARE TO BE PROVIDED UNDER ALL NUTS ON BEVELLED SURFACES SQUARE TAPER WASHERS OF 5 mm MEAN THICKNESS SHALL BE PROVIDED UNDER NUT OR HEAD AS APPROPRIATE

### 4.0 WELDING

- 4.1 WELDING USED IN THE FABRICATION WORK IS TO BE BY THE METALLIC ARC PROCESS USING ELECTRODES COMPLYING WITH THE REQUIREMENTS OF BS 639 THE WHOLE OF THE WORK IS TO BE IN ACCORDANCE WITH THE REQUIRMENTS LAID DOWN IN BS 5950 AND 5135.
- 4.2 THE ENDS OF ALL STANCHIONS AND POSTS TOGETHER WITH GUSSETS WHERE PRESENT AND ALREADY WELDED ON. SHALL BE MACHINED SO THAT THE WHOLE AREA IS IN DIRECT CONTACT WITH THE BASE, BEARING OR CAP PLATE, SUCH PLATES BEING TRULY AT RIGHT ANGLES TO THE STANCHION AXIS OR AS OTHERWISE SPECIFIED ON THE DRAWING.
- 4.3 MINIMUM SIZE OF WELD SHALL BE 6 mm UNLESS SPECIFIED.

#### 5.0 FLOORING AND GRATING

- 5.1 STAIR TREADS SHALL BE OF HOT DIP GALVANIZED GRATING.
- 5.2 SOLID FLOORING SHALL BE MADE OF TEAR PLATE (DURBAR OR EQUIVALENT).
- 5.3 CHEQUERED PLATE SHALL NOT BE USED FOR PLATFORMS IN OIL AND GAS PROCESSING PLANTS. HOWEVER CHEQUERED PLATE FLOORING IS PERMITTED TO BE USED AS TRENCH COVERING WITHIN CONTROL BUILDINGS AND ELECTRICAL SUBSTATIONS.
- 5.4 FOR OPEN FLOORING GALVANISED GRATING SHALL BE USED. THE MAIN BARS OF THE GRATING SHALL BE 25x5mm MINIMUM AT A CENTRE LINE SPACING OF 33 mm. LATERAL RESTRAINT SHALL BE PROVIDED BY 6 mm SQUARE TRANSVERSE BARS AT A SPACING OF 33 mm, WELDED INTO THE UPPER EDGE OF THE MAIN BARS, FIXING MATERIAL SHALL BE HOT DIP GALVANIZED TO BS EN ISO 1461:1999

### 6.0 ERECTION

- 6.1 FRECTION ON CONCRETE FOUNDATION SHALL NOT COMMENCE WITHIN 7 DAYS OF POURING THE CONCRETE FOUNDATIONS AND ONLY IF THE CONCRETE HAS ACQUIRED SUFFICIENT STRENGTH.
- 6.2 THE CONTRACTOR SHALL PROPERLY ALIGN EACH PART OF THE STRUCTURE BEFORE MAKING THE FIELD CONNECTIONS.
- 6.3 THE CONTRACTOR SHALL ENTIRELY BE RESPONSIBLE FOR THE STABILITY OF THE STEELWORK DURING ERECTION AND HE SHALL ARRANGE FOR ALL TEMPORARY GUYING, BRACING AND SUPPORTS TOGETHER WITH ANY ADDITIONAL TACK BOLTS NECESSARY FOR THE STABILITY OF THE STEELWORK UNTIL FINAL BOLTING UP.
- 6.4 THE STEELWORK SHALL BE ACCURATELY ERECTED WITHIN THE FOLLOWING TOLERANCE

±10mm OVERALL BUILDING SETTING OUT-PLAN BUT NOT MORE THAN ±5mm DIMENSIONS IN ANY ONE 5 METER BAY LEVELS-FOR STANCHIONS ±5mm AND COLUMN BASE PLATES. ? PLUMB OF STANCHIONS. 0.1 % OF HEIGHT, BUT NOT

STRAIGHTNESS OR BOW OR OUT OF SQUARENESS

OF SECTIONS AFTER

POSTS, ETC

FRECTION

NOT MORE THAN THE ROLLING TOLERANCES AS GIVEN IN BS 5950 PART 2: 2001

MORE THAN ±5 mm

OVERALL.

# 7.0 HOT-DIP GALVANIZING

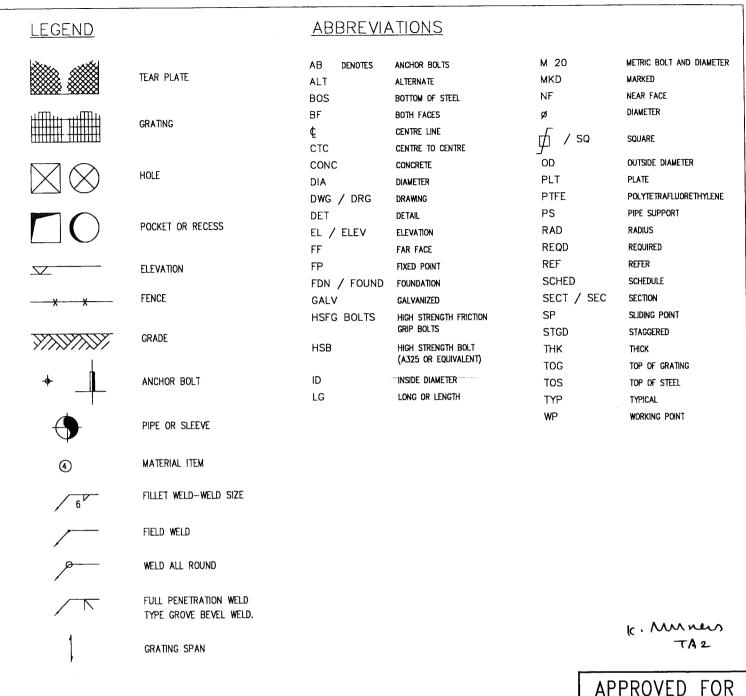
- 7.1 THE SURFACE OF ALL STEEL DESCRIBED AS GALVANISED ARE TO BE THOROUGHLY AND EVENLY COATED. THE AVERAGE WEIGHT OF THE ZINC LAYER SHALL BE 610g/m<sup>2</sup> OF GALVANIZED SURFACE
- 7.2 ALL DAMAGED GALVANIZED SURFACES AND ALL EDGES EXPOSED BY CUTTING AFTER GALVANIZING SHALL BE TREATED WITH TWO COATS OF ZINC PAINT SPRAYED IN ACCORDANCE WITH BS EN ISO 1461-1999.

### 8.0 CORROSION PROTECTION

8.1 CORROSION PROTECTION FOR STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH CONSTRUCTION SPECIFICATION SP-1279 PART N CIVIL AND BUILDING CONSTRUCTION SPECIFICATION, PAINTING AND DECORATING, FOR ALL STEEL STRUCTURES WITHIN OIL & GAS PLANT SHALL BE AS PER SP-1246.

# 9.0 EARTHING CONNECTIONS

9.1 PROVIDE EARTHING BOSS FOR ALL COLUMNS AND STAIR STRINGERS RESTING ON GROUND / FOUNDATIONS. THE EARTHING BOSS DETAILS SHALL CONFIRM TO DRG No. STD-4-0305-01- -4



CONSTRUCTION

REV	DATE	BY	CHEC	CKED	DESCRIPTION	WD3 NO.	PDOA	PPROVAL
		DRAWN	TEAML	J.ENG.	DECODIDATION	WBS No.	PROJ. ENG.	SIGNATURE
0	26.02.11	GCS	KBR	GSB	ISSUED FOR COMMENTS	IN.09.011	OSE/28N	
Α	27.02.11	GCS	3B_	1/2	APPROVED FOR CONSTRUCTION	IN.09.011	OSE/28N	

PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

CAD DRAWING :NIMR ARFA .PRODUCTION STATION NO. 05 SUB AREA 黎 Petroleum Development Oman STEEL STRUCTURE PROJ DWG REV DRWG.TYPE ARFA ENG SERIAL SHEET DRWG

ورلى بارسونز - الصناعات العربية (محاصة WorleyParsons - Arabian Industries (JV)

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

GENERAL NOTES, LEGEND DESCRIPTION AND ABBREVIATIONS

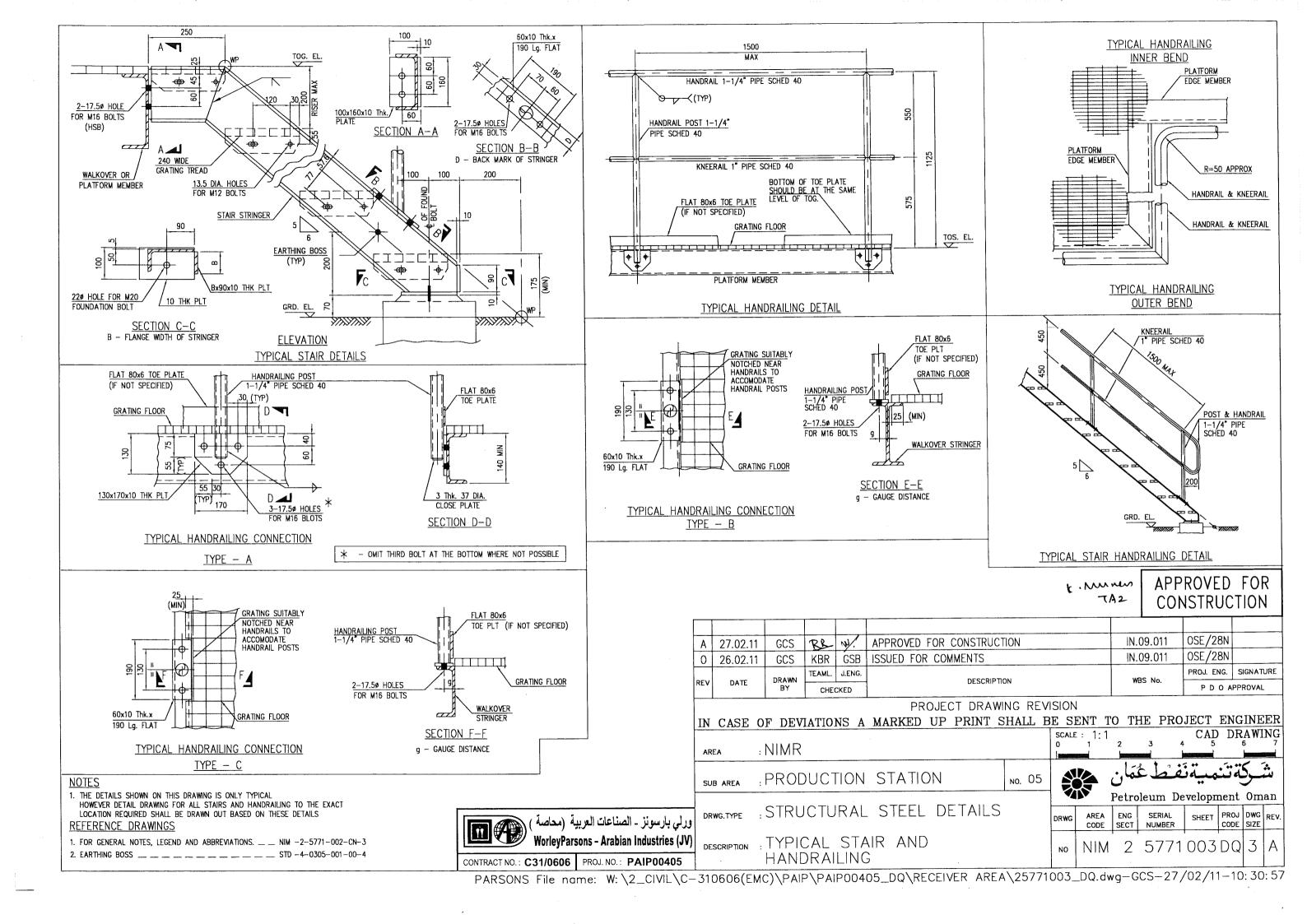
NIM 2 5771002DQ|3|

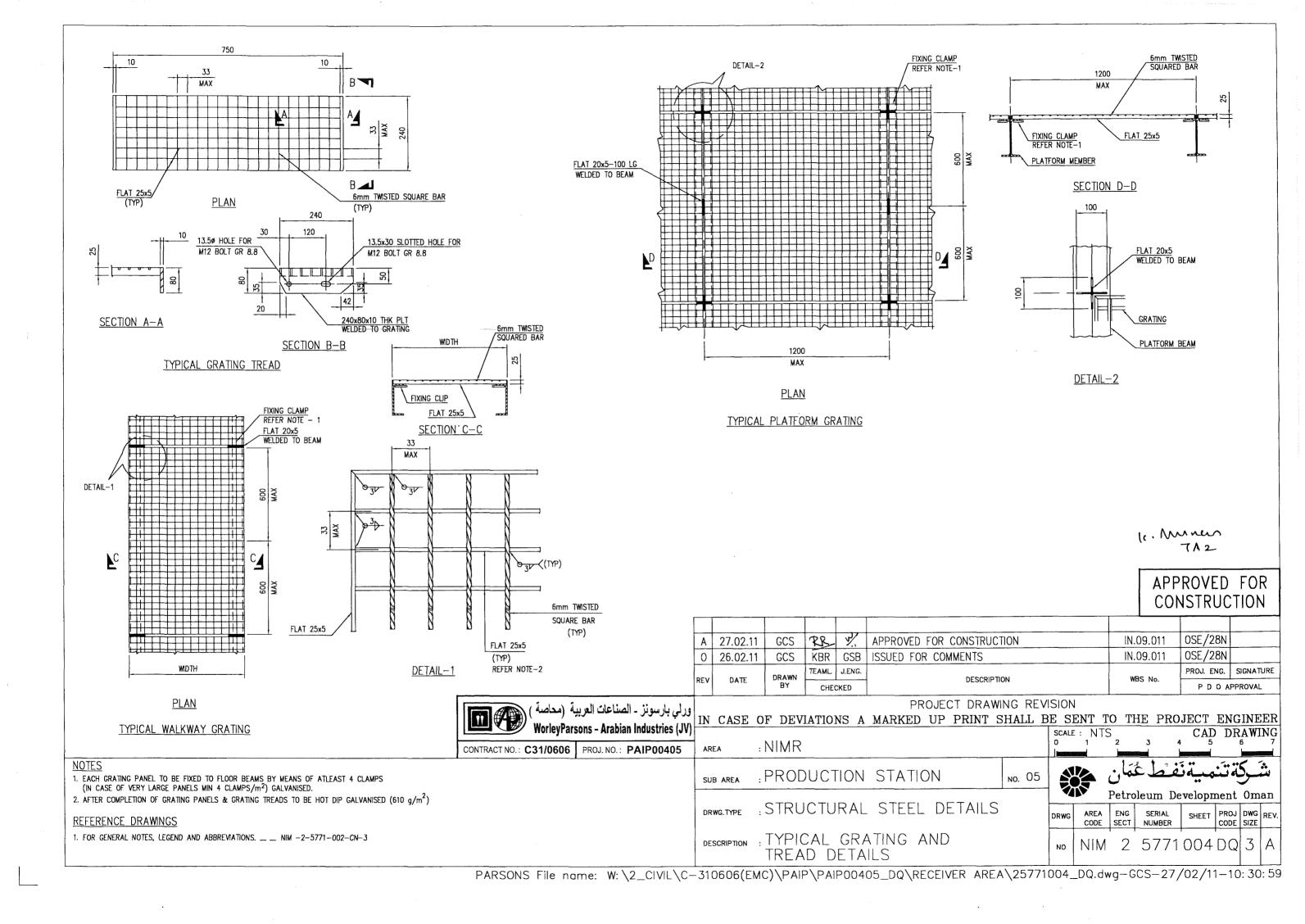
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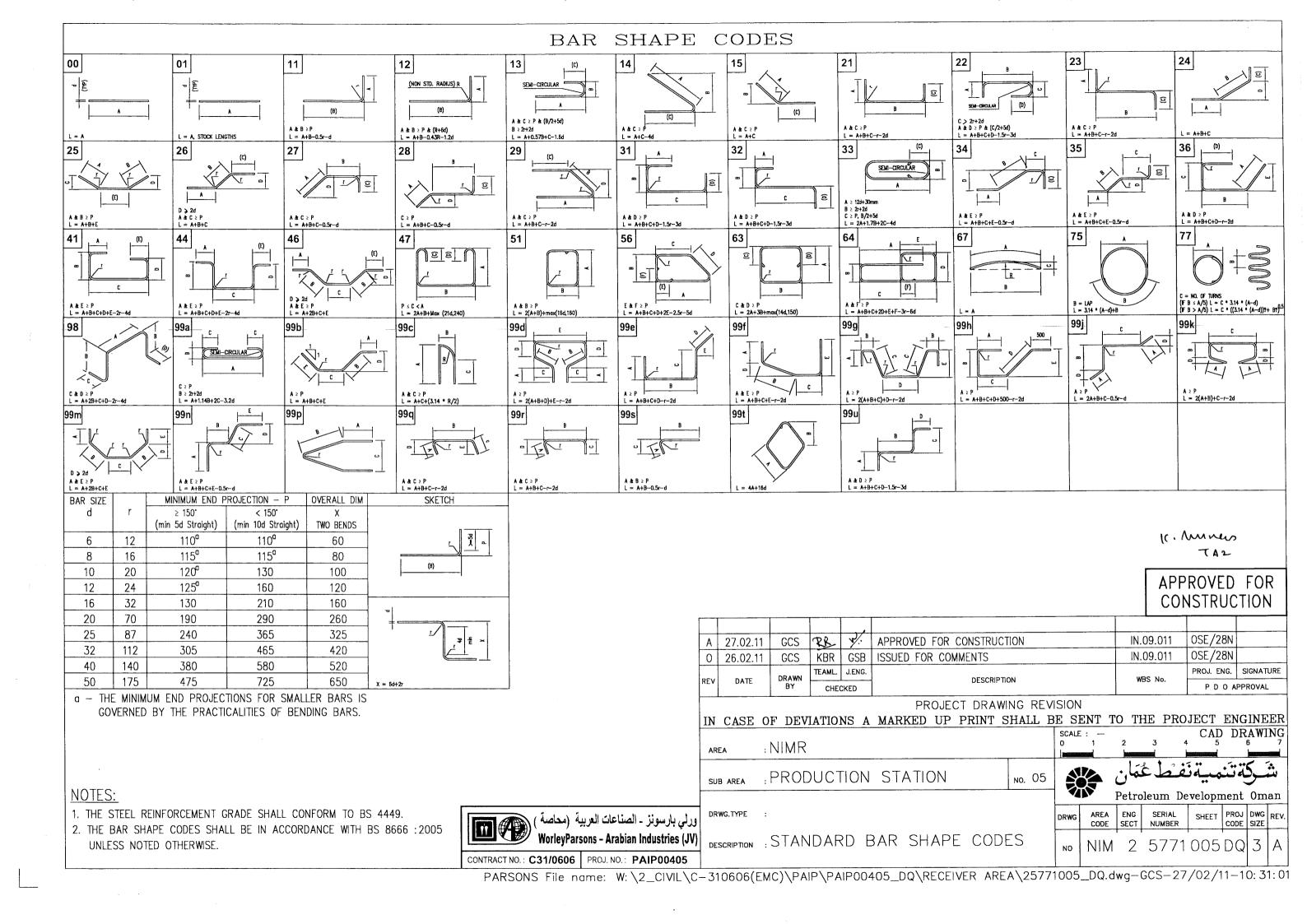
NUMBER

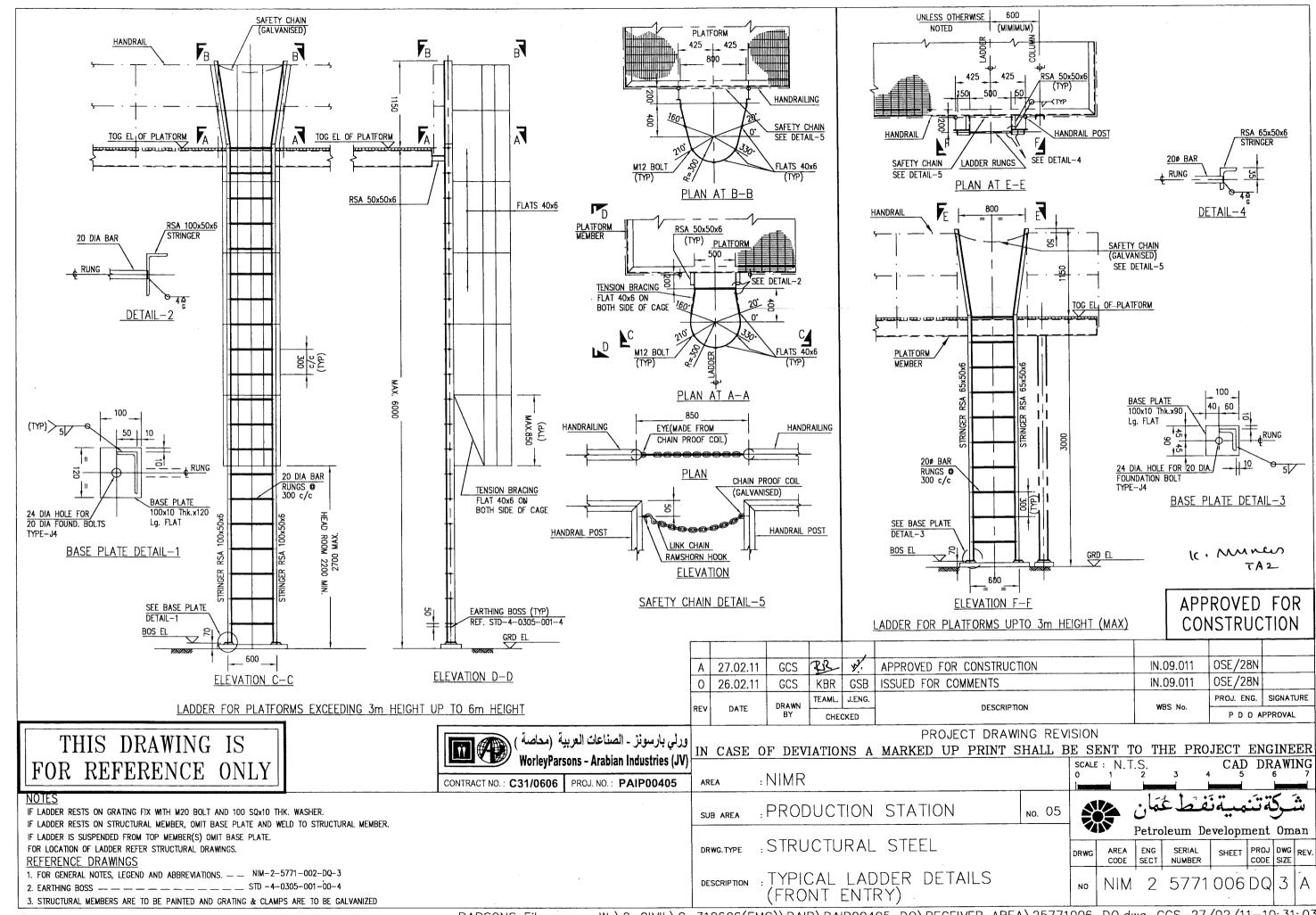
SECT

CODE



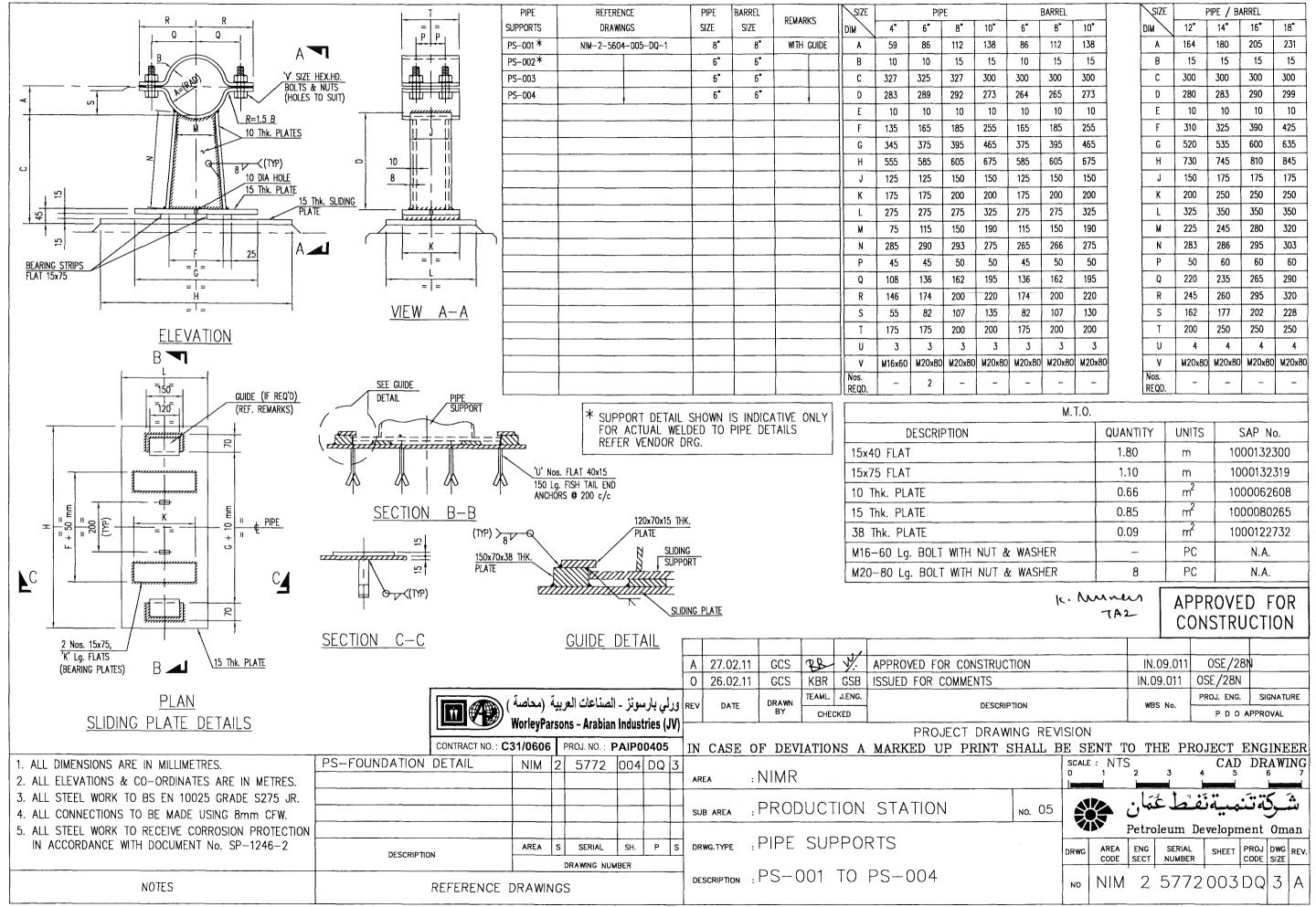


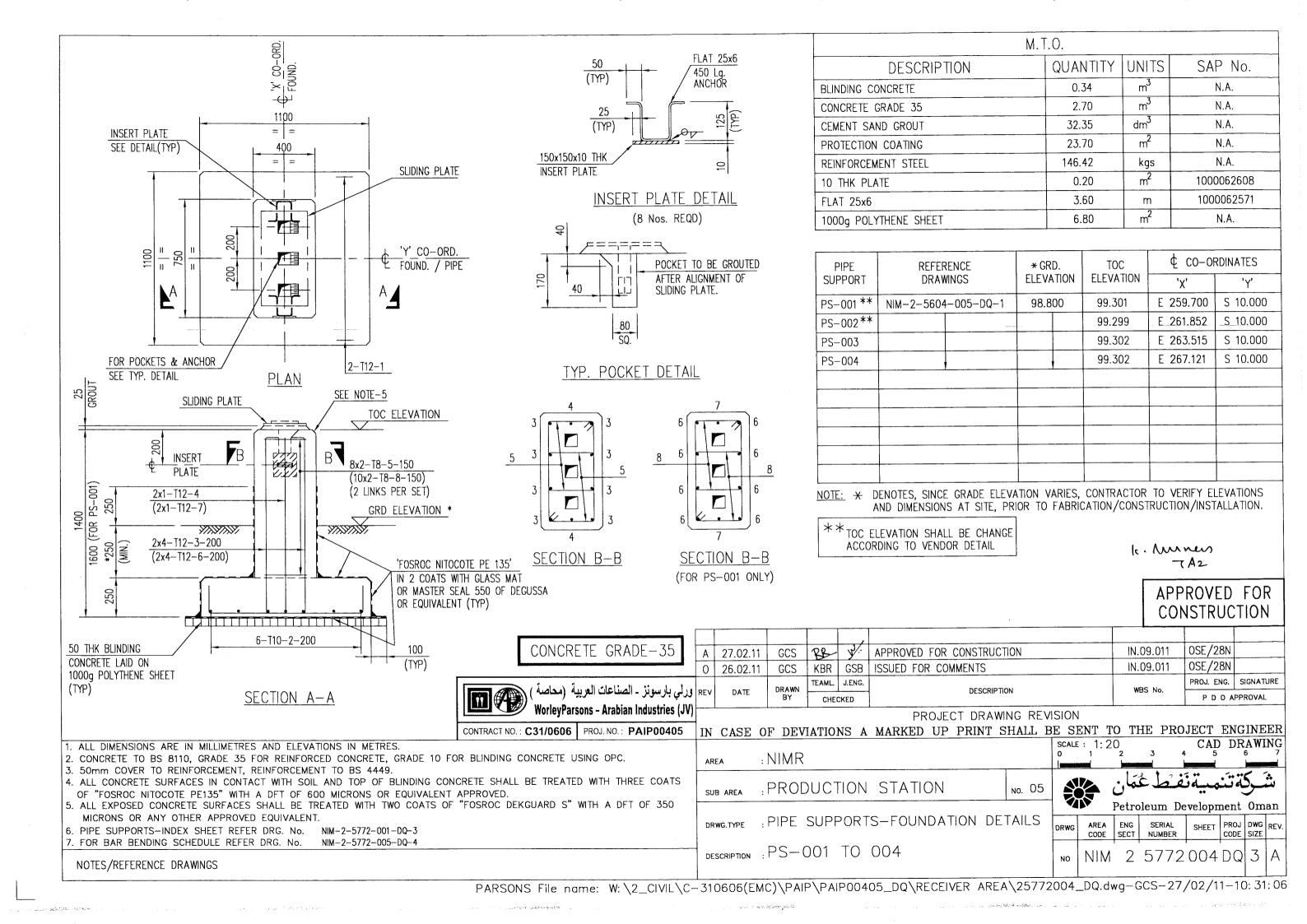




PIPE SUPPORT/	REFE	ERENCE DRAWI	NGS		PIPE SUPPORT/	REFE	RENCE DRAWI	NGS	
SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PLAN	REMARKS	SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PLAN	REMARKS
PS-001	NIM-2-5772-003-DQ-3	NIM-2-5772-004-DQ-3	NIM-2-5604-005-DQ-1		PS-032	_	_	_	SPARE
PS-002				_	PS-033	NIM-2-5772-020-DQ-3	NIM-2-5772-010-DQ-3	NIM-2-5604-005-DQ-1	
PS-003				_	PS-034	NIM-2-5772-020-DQ-3	NIM-2-5772-010-DQ-3	NIM-2-5604-005-DQ-1	_
PS-004				_	PS-035 TO 050	_	_	_	SPARE
PS-005	NIM-2-5772-006-DQ-3	_	NIM-3-2120-001-DQ-1	_	PS-051 TO 066	_	_	_	LAUNCHER AREA
PS-006	NIM-2-5772-007-DQ-3		NIM-2-5604-005-DQ-1	_	U BOLT DET.	NIM-2-5772-021-DQ-3	_	_	
PS-007	NIM-2-5772-008-DQ-3			_	U BOLT GRIPPED	NIM-2-5772-022-DQ-3	_	_	
PS-008		NIM-2-5772-010-DQ-3		_	PIPE GUIDE DET.	NIM-2-5772-023-DQ-3	_	_	
PS-009	NIM-2-5772-008-DQ-3			_					
PS-010		NIM-2-5772-010-DQ-3		_					
PS-011		NIM-2-5772-010-DQ-3		_					
PS-012	NIM-2-5772-014-DQ-3								
PS-013		NIM-2-5772-010-DQ-3		_					
PS-014		NIM-2-5772-010-DQ-3							
PS-015	_ <del>-</del>	NIM-2-5772-010-DQ-3							
PS-016		NIM-2-5772-010-DQ-3							
PS-017		NIM-2-5772-010-DQ-3							
				_			·		
PS-018	NIM-2-5//2-013-0Q-3	NIM-2-5772-010-DQ-3		CDADE					
PS-019		_	_	SPARE					
PS-020				SPARE					
PS-021		NIM-2-5772-010-DQ-3	NIM-2-5604-005-DQ-1	_					
PS-022	<del></del>	NIM-2-5772-010-DQ-3							
PS-023		NIM-2-5772-010-DQ-3		-					
PS-024		NIM-2-5772-010-DQ-3				·			
PS-025		NIM-2-5772-010-DQ-3		-					1. Minus
PS-026		NIM-2-5772-010-DQ-3		-					TA2
PS-027		NIM-2-5772-017-DQ-3		_					APPROVED FOR
PS-028	NIM-2-5772-016-DQ-3	NIM-2-5772-017-DQ-3		_					CONSTRUCTION
PS-029	NIM-2-5772-019-DQ-3	_		_					CONSTRUCTION
PS-030	NIM-2-5772-019-DQ-3			_		2 1/ 1775	TO TOP CONTENTS	W 00 6	005 (00)
PS-031		_		SPARE	A 27.02.11		OVED FOR CONSTRUCTION ED FOR COMMENTS	IN.09.0	
				* * * *	0 26.02.11	TEAML, J.ENG.	TO FOR COMMENTS	III.05.0	PROJ. ENG. SIGNATUR
				ز - الصناعات العربية (محاص	·	DRAWN CHECKED	DESCRIPTION	WBS N	
			W.	orleyParsons - Arabian Ind	dustries (JV)		PROJECT DRAWING	REVISION	
			CONTRACT NO.: C31	/0606 PROJ. NO.: PAI	IP00405 IN CASE O	F DEVIATIONS A MAF	KED UP PRINT SHAL		PROJECT ENGINEE
						NIMP		SCALE: NTS 0 1 2 3	CAD DRAWING
					AREA :	NIMR		1 2 1	2 ** ** ** **
					SUB AREA :	PRODUCTION ST	ATION NO.	وغمان مان Petroleu	شركةتنميهنعط
								Petroleu	m Development Omar
I .	SHALL REFER PIPING PLAN ,I	3	DESCRIPTION	AREA S SERIAL S	SH. P S DRWG.TYPE :	PIPE SUPPORTS	(RECEIVER)	DRWG AREA ENG SECT NU	RIAL SHEET PROJ DWG RE
FABRICATION, IN	NSTALLATION OF PIPE SUPP	ORTS	DESCRIP HON	DRAWING NUMBER	R	MIDEV CHEETO		, , , , , , , , , , , , , , , , , , , ,	
	NOTES		REFERENCE DF	RAWINGS	DESCRIPTION :	INDEX SHEETS		NO NIM 2 57	772 001 DQ 3 A
L			PARSONS F	ile name: W:\2	CIVIL\C_310606(FM	C)\PAIP\PAIP00405_D	ONRECEIVER AREANS	5772001 DQ.dwa-GCS	-27/02/11-10:31:0

PIPE SUPPORT/	REFE	ERENCE DRAWI	NGS		PIPE SUPPORT/	REF			
SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PLAN	REMARKS	SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PL	AN REMARKS
SL-001		NIM-2-5772-024-DQ-3	NIM-2-5604-005-DQ-1	_	SL-032	_	_	_	-
SL-002		NIM-2-5772-024-DQ-3		-	SL-033	-	_	_	<u></u>
SL-003		NIM-2-5772-026-DQ-3		_	SL-034	-	_	_	-
SL-004	-	NIM-2-5772-028-DQ-3		_	SL-035	_	_	-	-
SL-005		NIM-2-5772-026-DQ-3		-	SL-036	_	-	_	_
SL-006	~	NIM-2-5772-028-DQ-3		_	SL-037	-	_	_	_
SL-007		_	_	SPARE	SL-038	_	_	_	_
SL-008	~	_	_	SPARE	SL-039	_	_	_	_
SL-009	_	_	_	SPARE	SL-040	_	_	_	_
SL-010	_	NIM-2-5772-030-DQ-3	NIM-2-5604-005-D0-1	-	SL-041	_	_	_	_
SL-011	~	NIM-2-5772-030-DQ-3		_	SL-042	_		_	_
SL-012	-	-	-	SPARE	SL-043	_	_		_
SL-013	~	_	_	SPARE	SL-044	_		_	_
SL-014		NIM=2-5772-030-DQ-3	NIM-2-5210-001-00-1	-	SL-045	_	_		
SL-015		NIM-2-5772-030-DQ-3			SL-046			_	_
SL-016	_	NIM-2-5772-030-DQ-3			SL-047				_
SL-017		NIM-2-3772-030-DQ-3	NIM-2-3210-001-0Q-1	SPARE	SL-047			1_	
SL-017				SPARE	SL-049				_
SL-019		- NIM 0 5770 070 DO 7	- NIN 2 5010 001 DO 1				-		
SL-019		NIM-2-5772-030-DQ-3	NIM-2-3210-001-0Q-1	-	SL-050	_			
		_	_	SPARE	SL-051	_	-	_	
SL-021	-		_	SPARE	SL-052	-		_	
SL-022		- NILL O 5774 007 DO 7		SPARE	SL-053	-	<u> </u>		
SL-023		NIM-2-5774-003-DQ-3	NIM-2-5604-005-DQ-1	-	SL-054	-	-	-	-
SL-024			_	_	SL-055	-	-	-	-
SL-025		_	_	_	SL-056	_		_	1c. Munes
SL-026		-	_	-					(c. 1000 racs
SL-027		-	_	_					APPROVED FO
SL-028		_	_	-					CONSTRUCTION
L-029	-	_	_	-					CONSTRUCTION
SL-030	_	_	_	-		200 12 17 185	DOUGE FOR CONCERNATION		IN 00 044 OCE (201)
L-031			_		A 27.02.11 0 26.02.11		PROVED FOR CONSTRUCTION UED FOR COMMENTS		IN.09.011 OSE/28N IN.09.011 OSE/28N
				4 > 1 1 10 4 10 10 10		TEAML LENG			PROJ. ENG. SIGN
				ونز - الصناعات العربية (محاه	•	DRAWN CHECKED	DESCRIPTION		WBS No. P D O APPRO
			Wo	rleyParsons - Arabian Indu	stries (JV)		PROJECT DRAWING I	REVISION	
			CONTRACT NO.: C31	0606 PROJ. NO.: PAIP	00405 IN CASE 0	F DEVIATIONS A MA	ARKED UP PRINT SHAL		THE PROJECT ENGIN
					AREA :	NIMR		SCALE : NTS	CAD DRA 5 6
					AREA :	VIIVII			1 - 2 + 5 + 5 + 5 + 5
					SUB AREA :	PRODUCTION S	TATION NO.	05 P	كة تنمية نفط عُمَار
								P	etroleum Development 0
DECODERTON				AREA S SERIAL SH.	P S DRWG.TYPE :	PIPE SUPPORTS	S	DRING AREA	ENG SERIAL SHEET PROJ DI
FABRICATION, INS	STALLATION OF PIPE SUPPO	DRTS	DESCRIP HON	DRAWING NUMBER		ואותרע כווררדכ			
	NOTES		REFERENCE DR	AWINGS	DESCRIPTION :	INDEX SHEETS		NO NIM	2 5772 002 DQ 3
			PARSONS Fi						







JOB NO.:

PAIP00238

Document No.: NIM-2-5772-005-DQ-4

PART ID.:

PRODUCTION STATION

Revision No.:

Α

PS-001 TO 004

REF. DWG NO.: NIM-2-5772-004-DQ-3

Prepared by:

GCS

Checked by:

PNG RE

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		113.90	30.60	92.00				
Weight (Kgs)		45.56	18.98	81.88				
Total Weight (Kgs)								

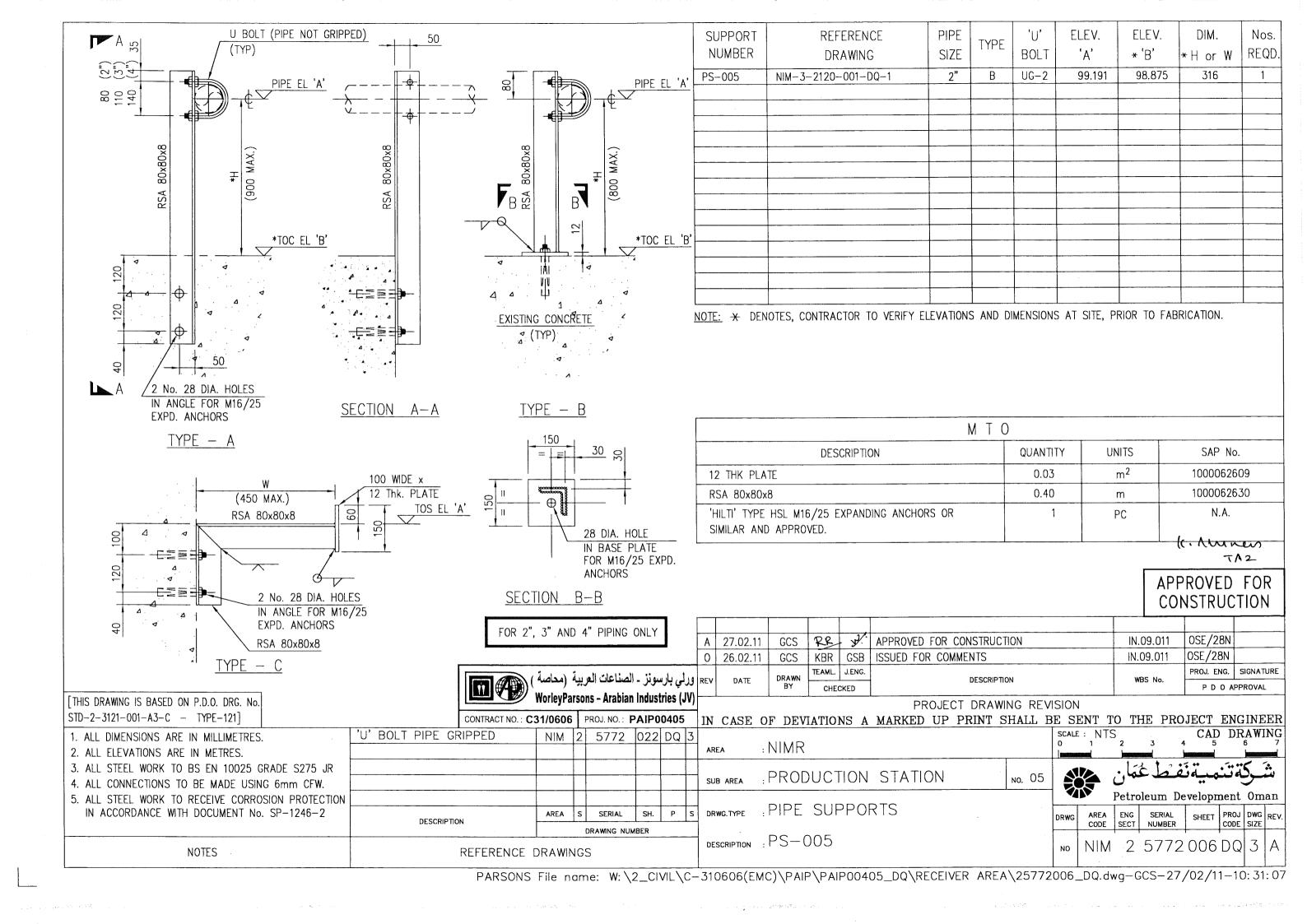
1c. munus

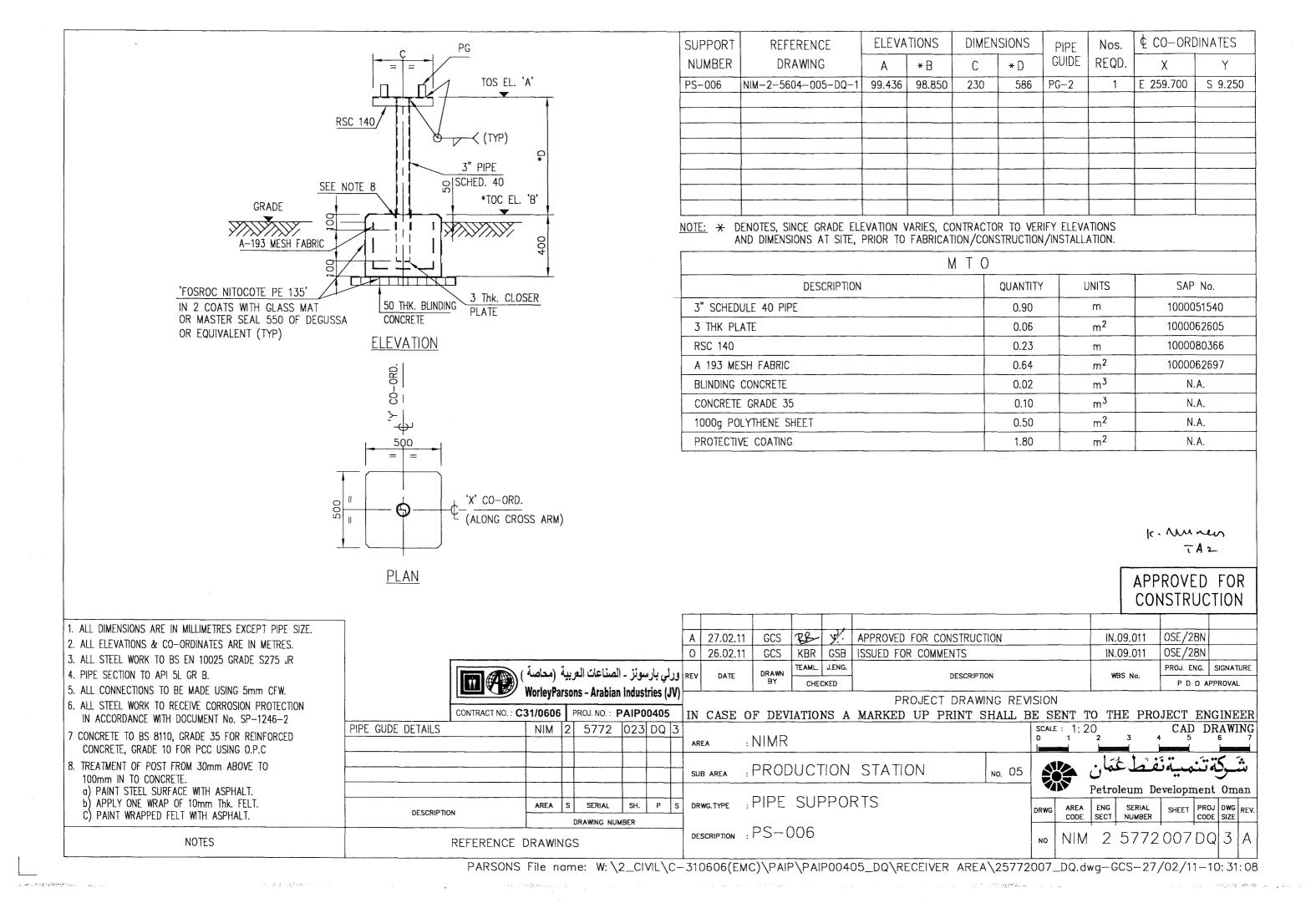
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C*	D.	E/R*
PS-001 TO 004	1	T12	4	2	8	1275	21	150	1000	150		
	2	T10	4	6	24	1275	21	150	1000	150		
	3	T12	3	8	24	2100	31	100	1300	650	100	
	4	T12	3	2	6	1575	11	300	1290			
	5	Т8	3	16	48	1675	51	450	300			
	6	T12	1	8	8	2300	31	100	1500	650	100	
	7	T12	1	2	2	1775	11 .	300	1490			
	8	T8	1	20	20	1675	51	450	300			
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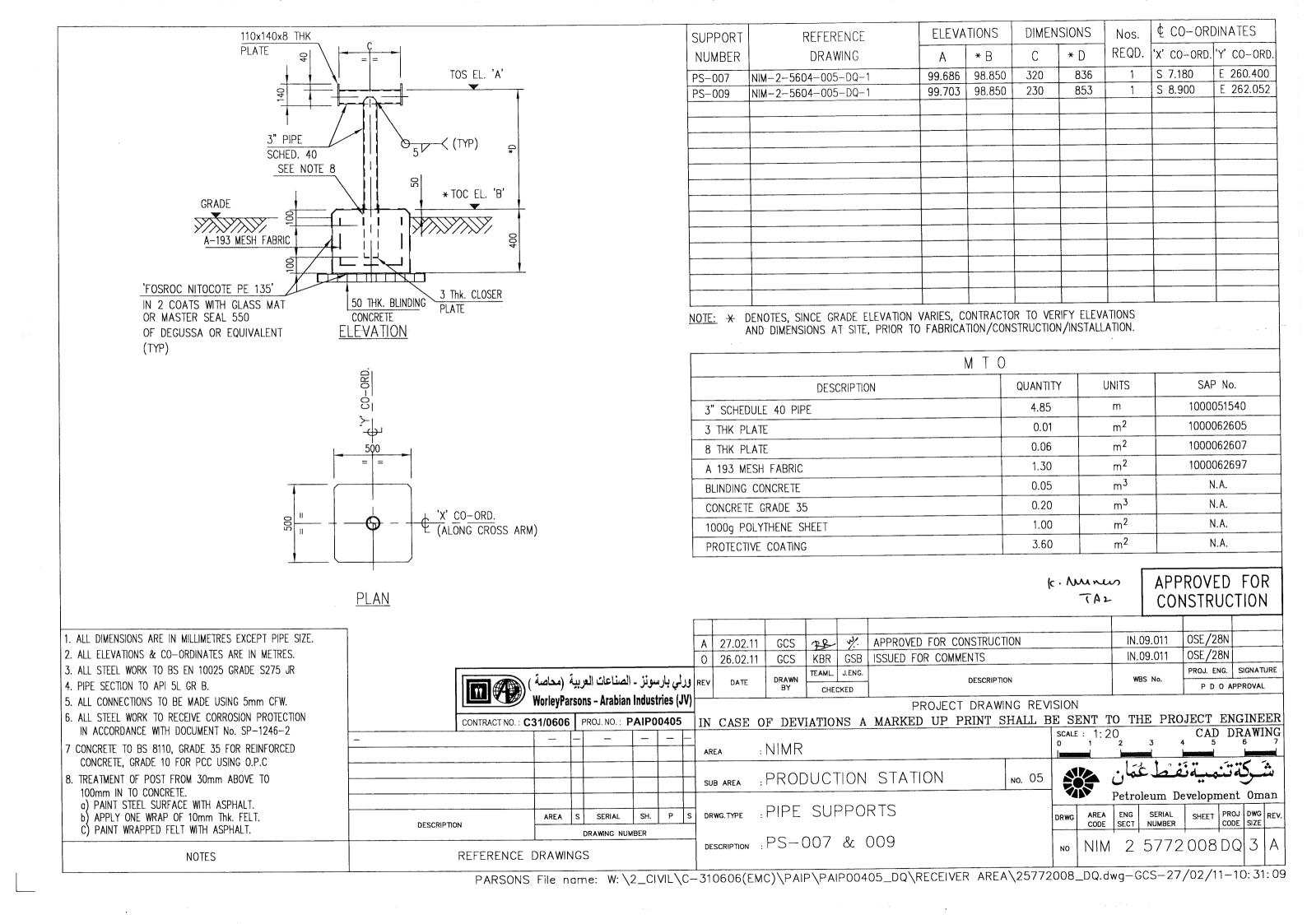
This schedule complies with BS 8666: 2005 All dimensions are in mm

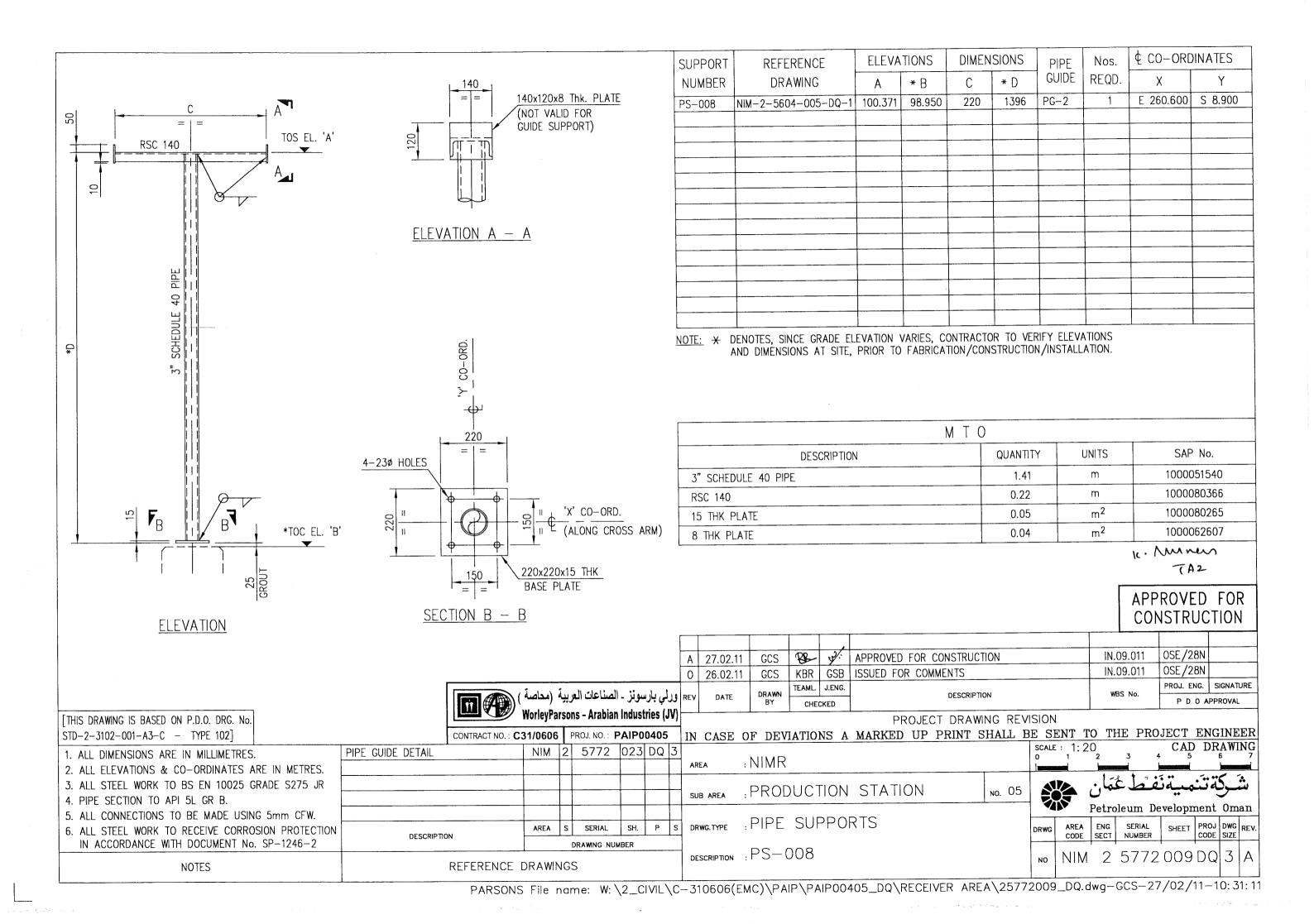
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

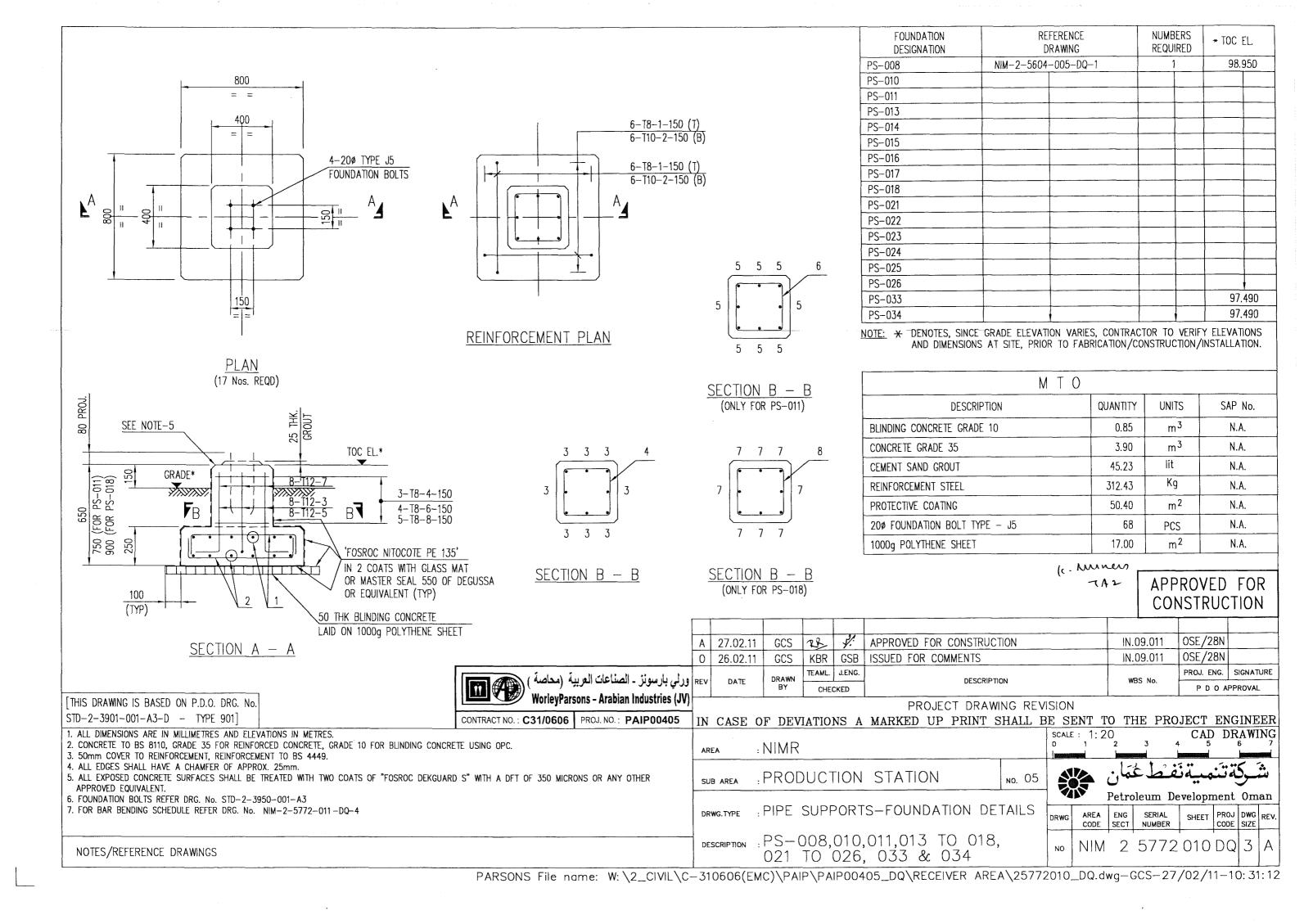
<sup>†</sup> Specified in multiples of 25 mm

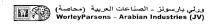












JOB NO.: PART ID.: PAIP00238

PRODUCTION STATION

Document No.: NIM-2-5772-011-DQ-4

Revision No.: A

GCS

Prepared by: Checked by:

PNG

Date:

27.02.11

REF. DWG NO.: NIM-2-5772-010-DQ-3

Total MTO for Rebars.

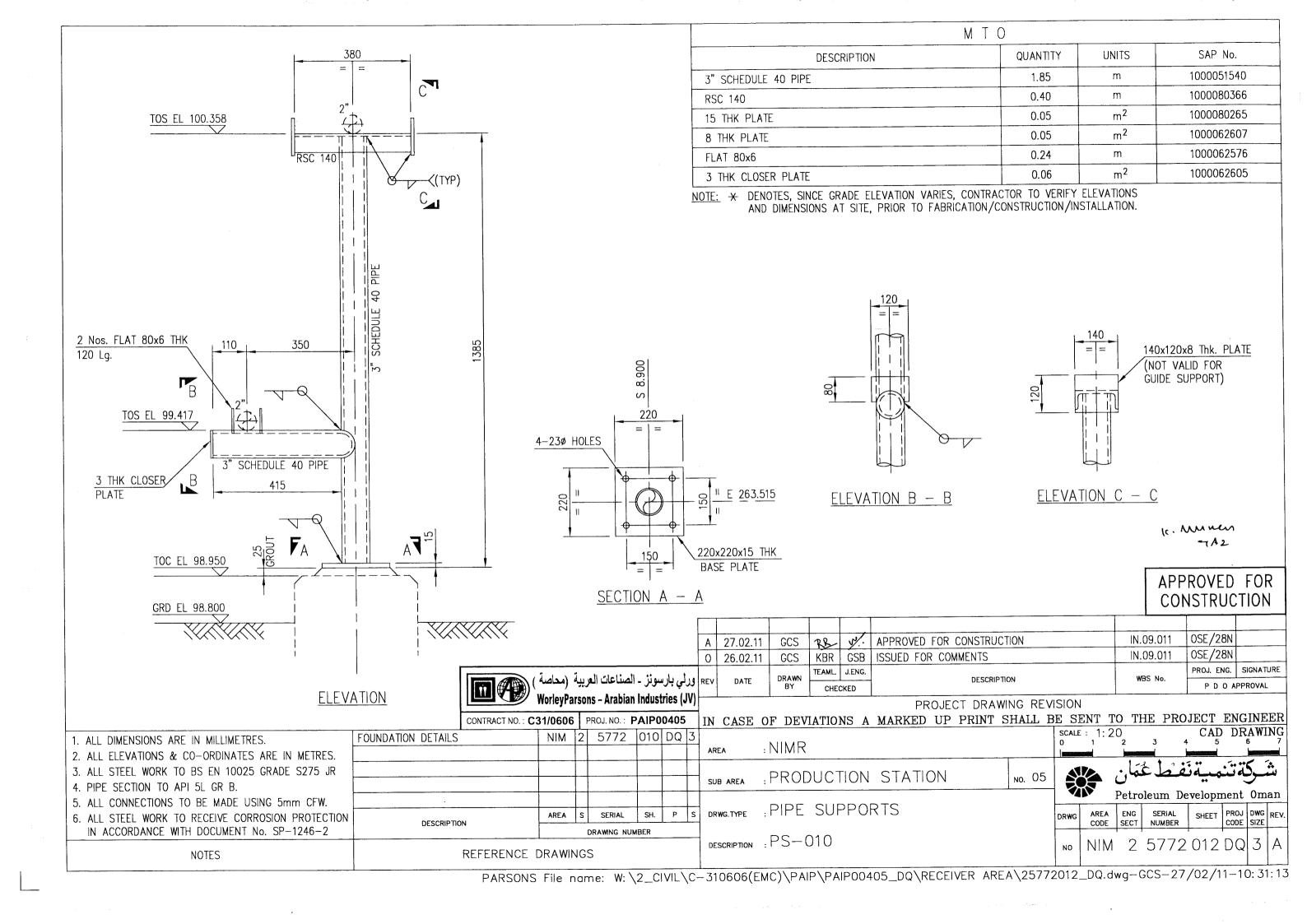
Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32		
Length of Bar (m)		262.95	188.70	101,40						
Weight (Kgs)		105.18	117.00	90.25						
Total Weight (Kgs)										

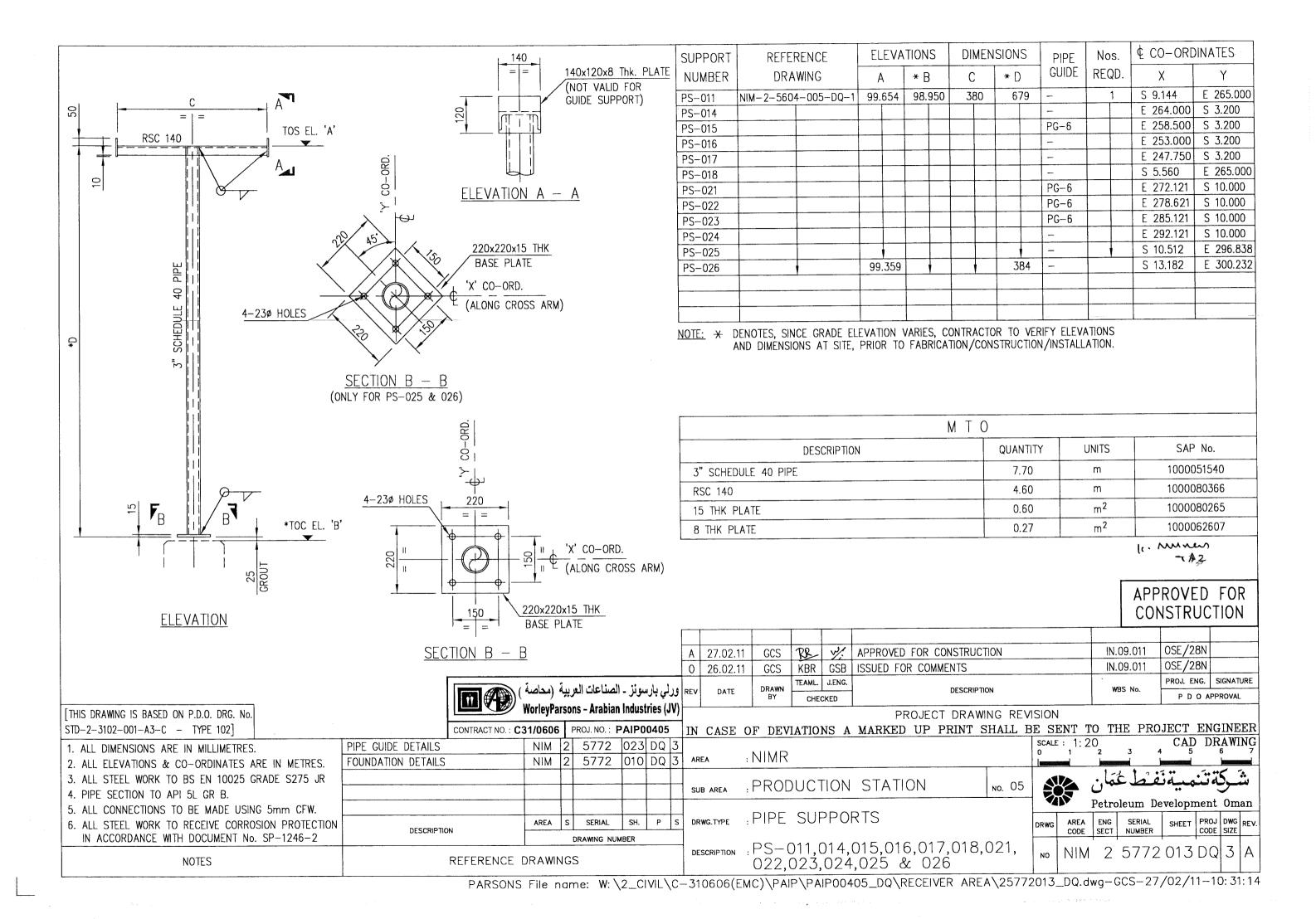
K. Muners

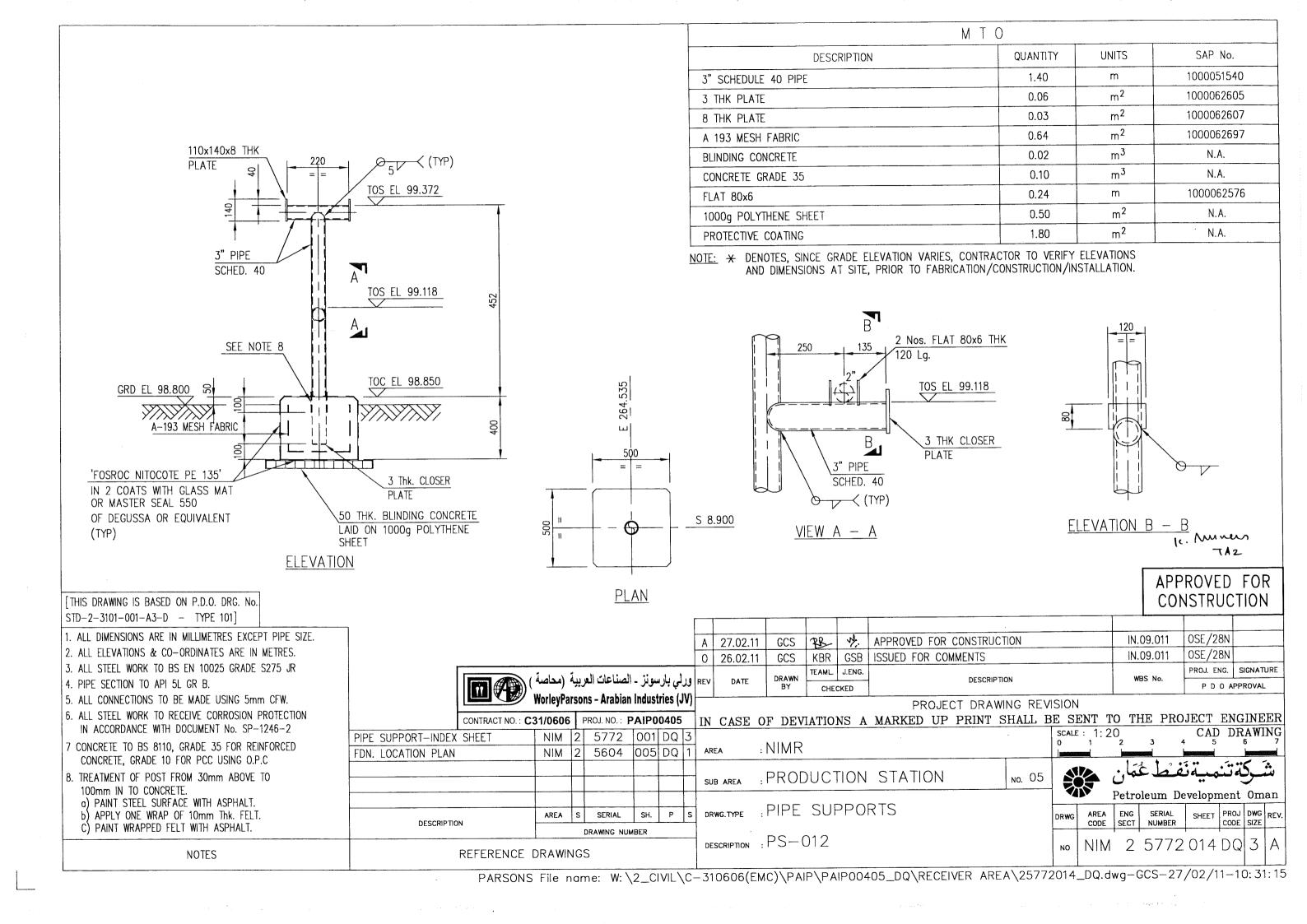
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D,	E/R*
PS-008,010,11,	1	Т8	17	12	204	925	21	125	700	125		
013 TO 0018	2	T10	17	12	204	925	21	125	700	125		
021 TO 026	3	T12	15	8	120	725	11	200	530			
033 & 34	4	T8	15	3	45	1375	51	300	300			
	5	T12	1	8	8	825	11	200	630			
	6	Т8	1	4	4	1375	51	300	300			
	7	T12	1	8	8	975	11	200	780			
	8	Т8	1	5	5	1375	51	300	300			
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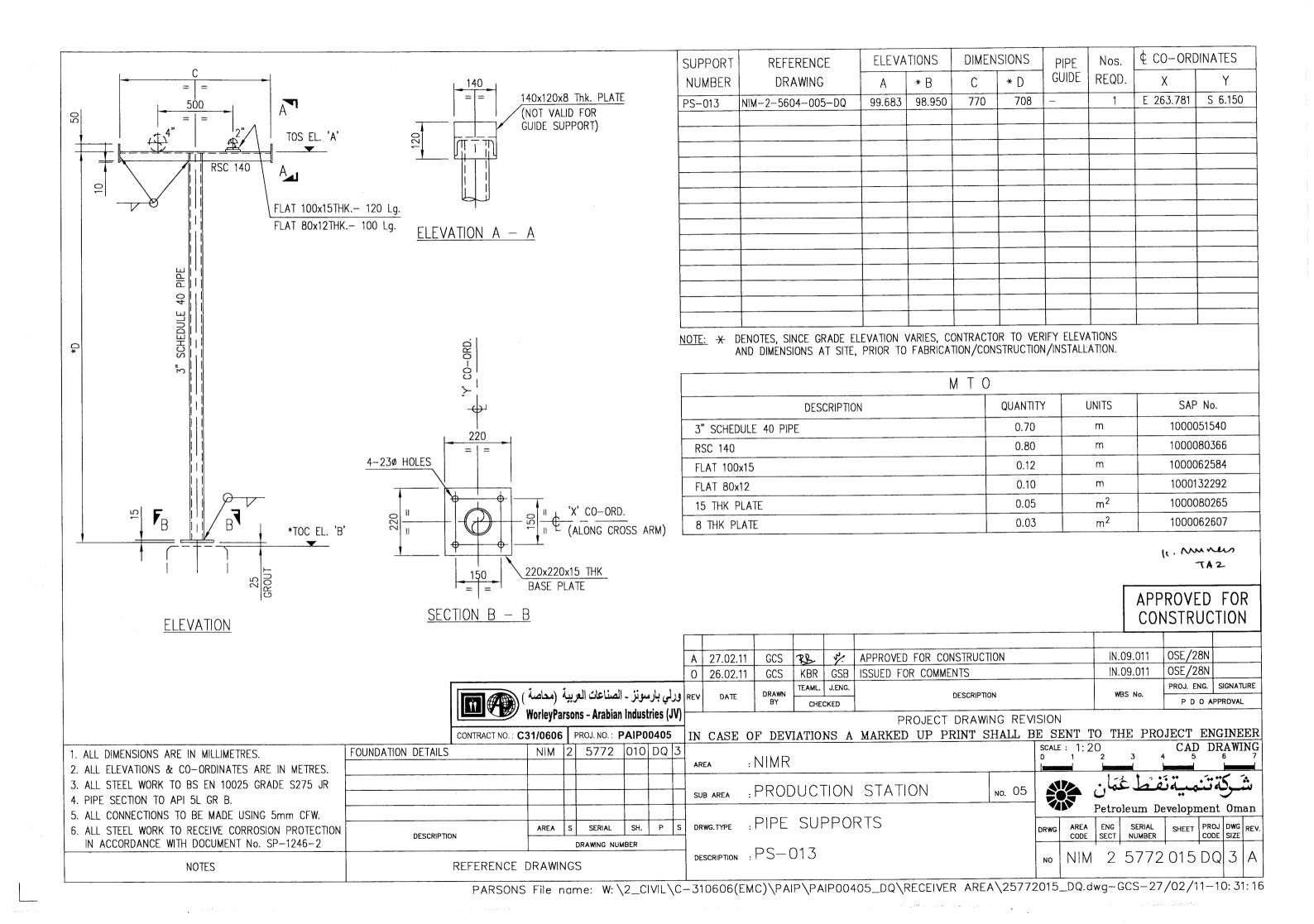
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

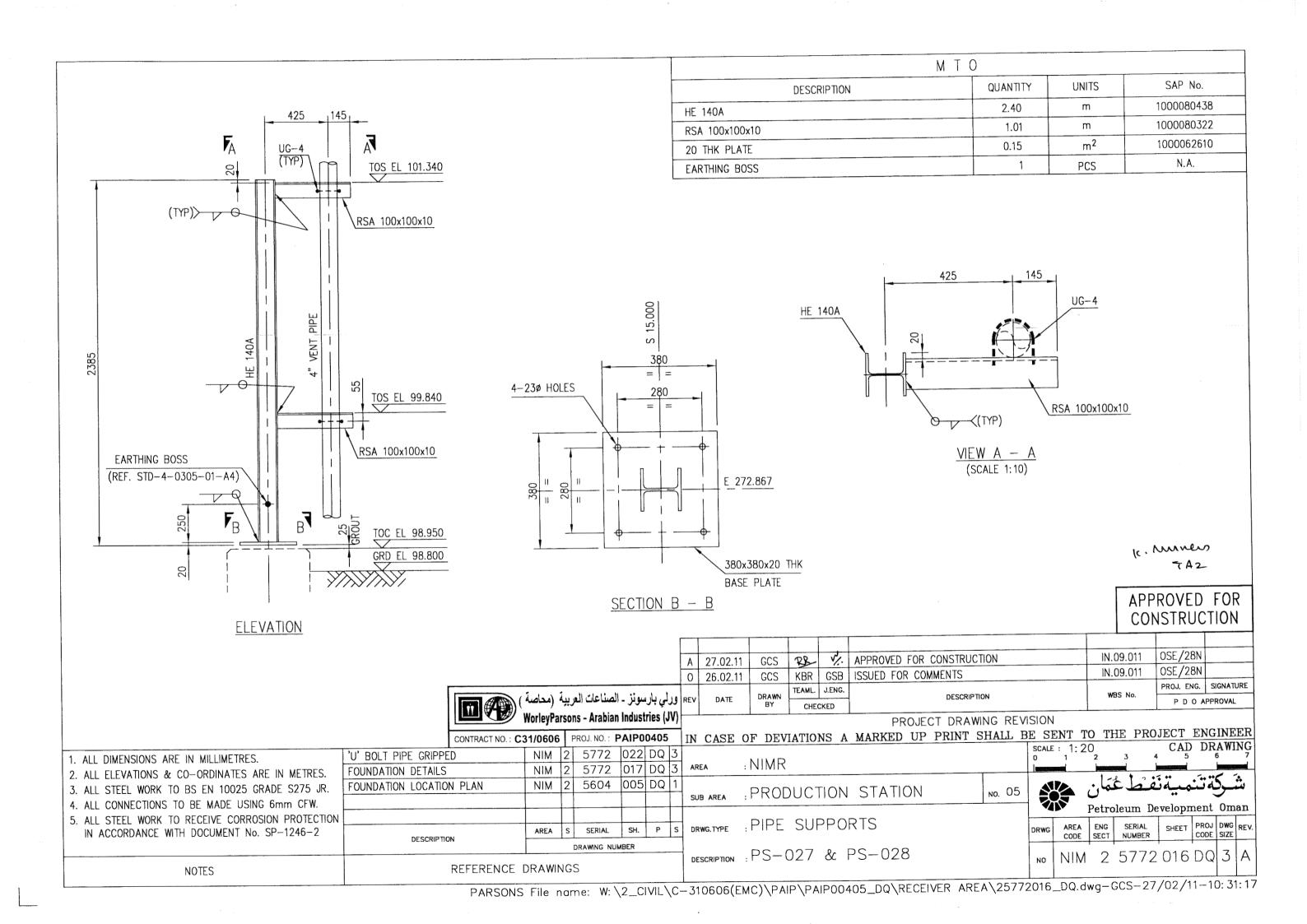
<sup>†</sup> Specified in multiples of 25 mm

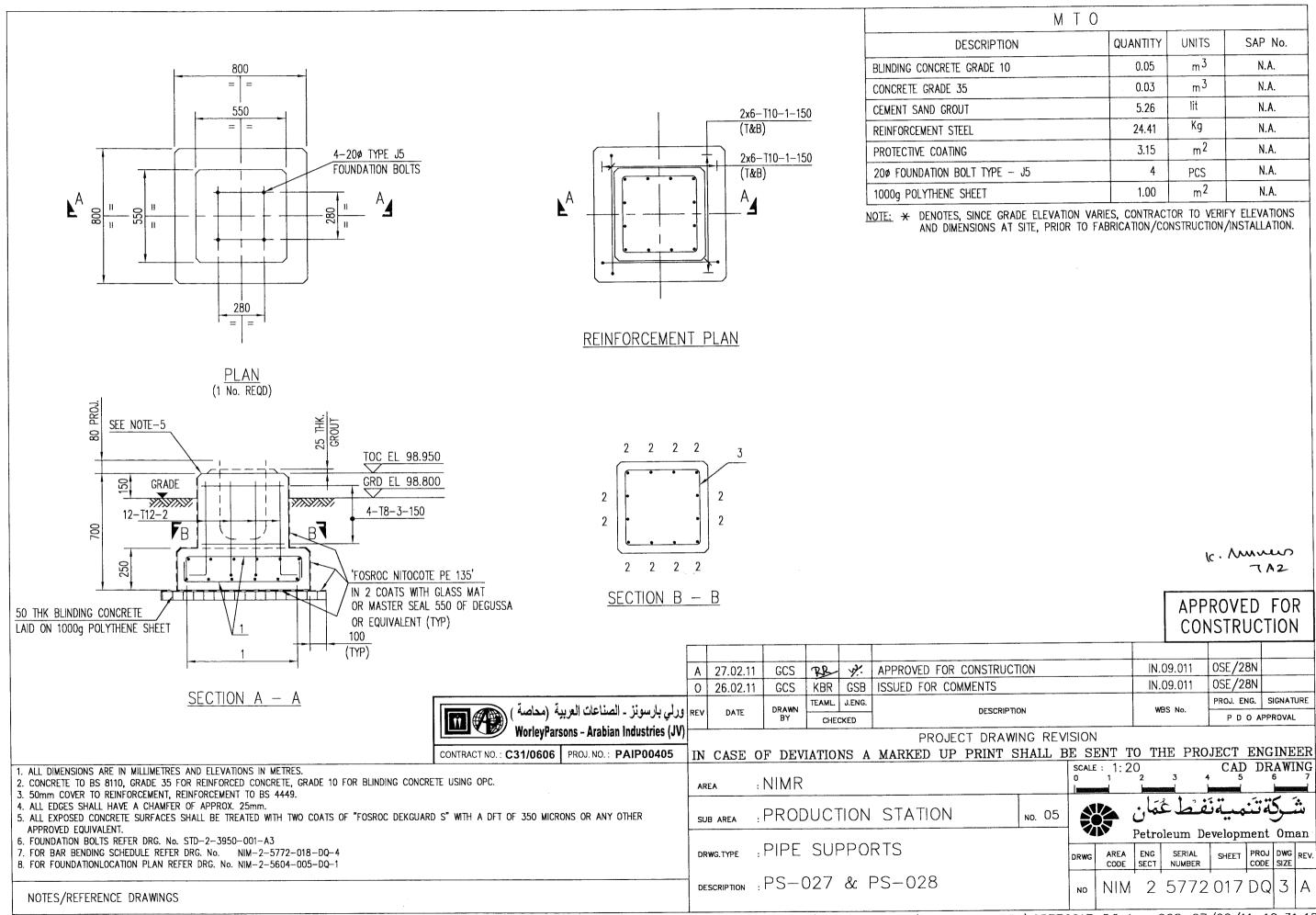














JOB NO.: PART ID.: PAIP00238

PRODUCTION STATION

PS-027 & 028

REF. DWG NO.: NIM-2-5772-017-DO-3

Document No.: NIM-2-5772-018-DQ-4

Revision No.:

Α

Prepared by: Checked by: GCS PNG RE

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar T6 T8 T10 T12 T16 T20 T25 T32 Length of Bar (m) 7.90 22.20 8.40 Weight (Kgs) 3.16 13.77 7.48 Total Weight (Kgs)

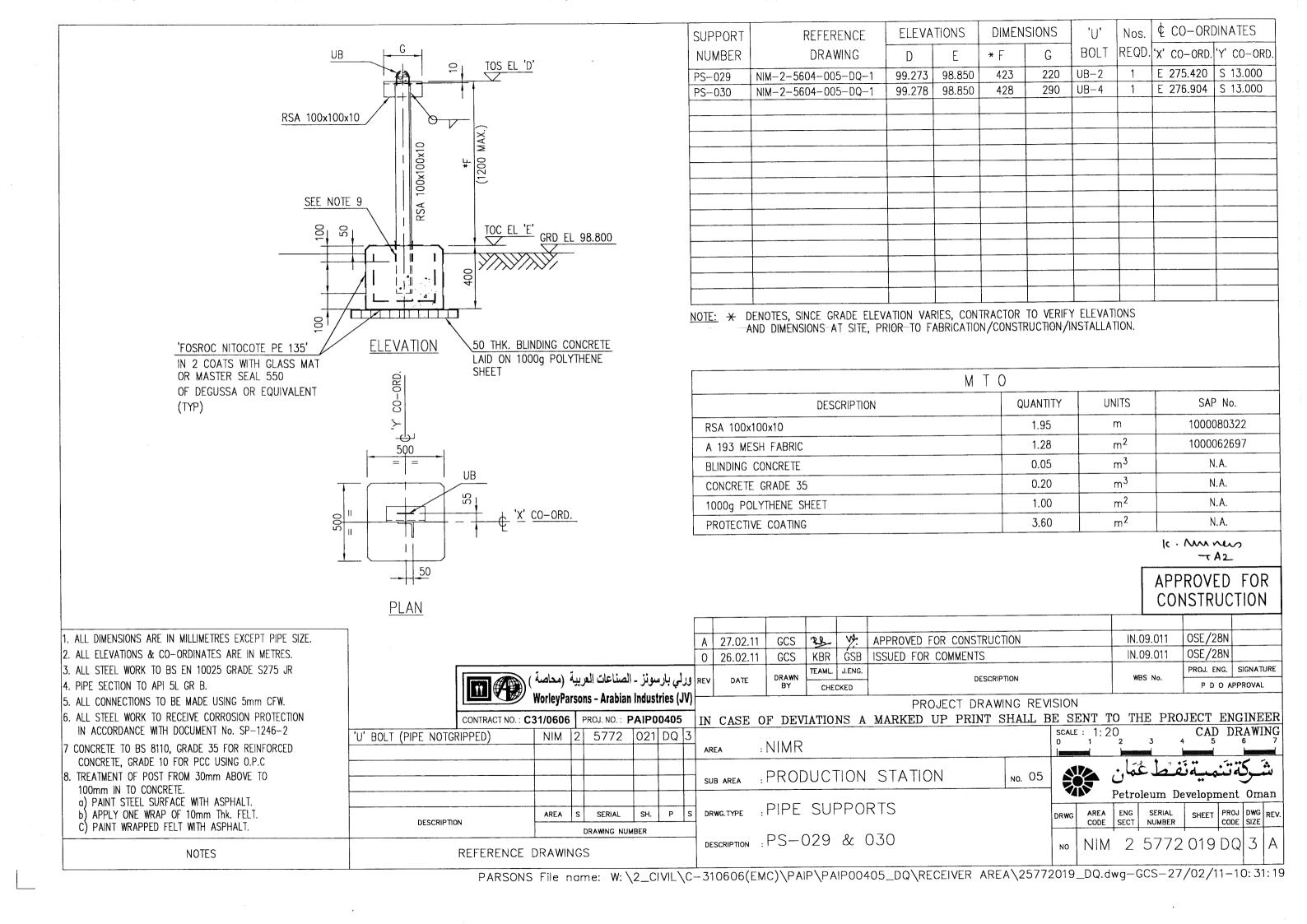
24.410

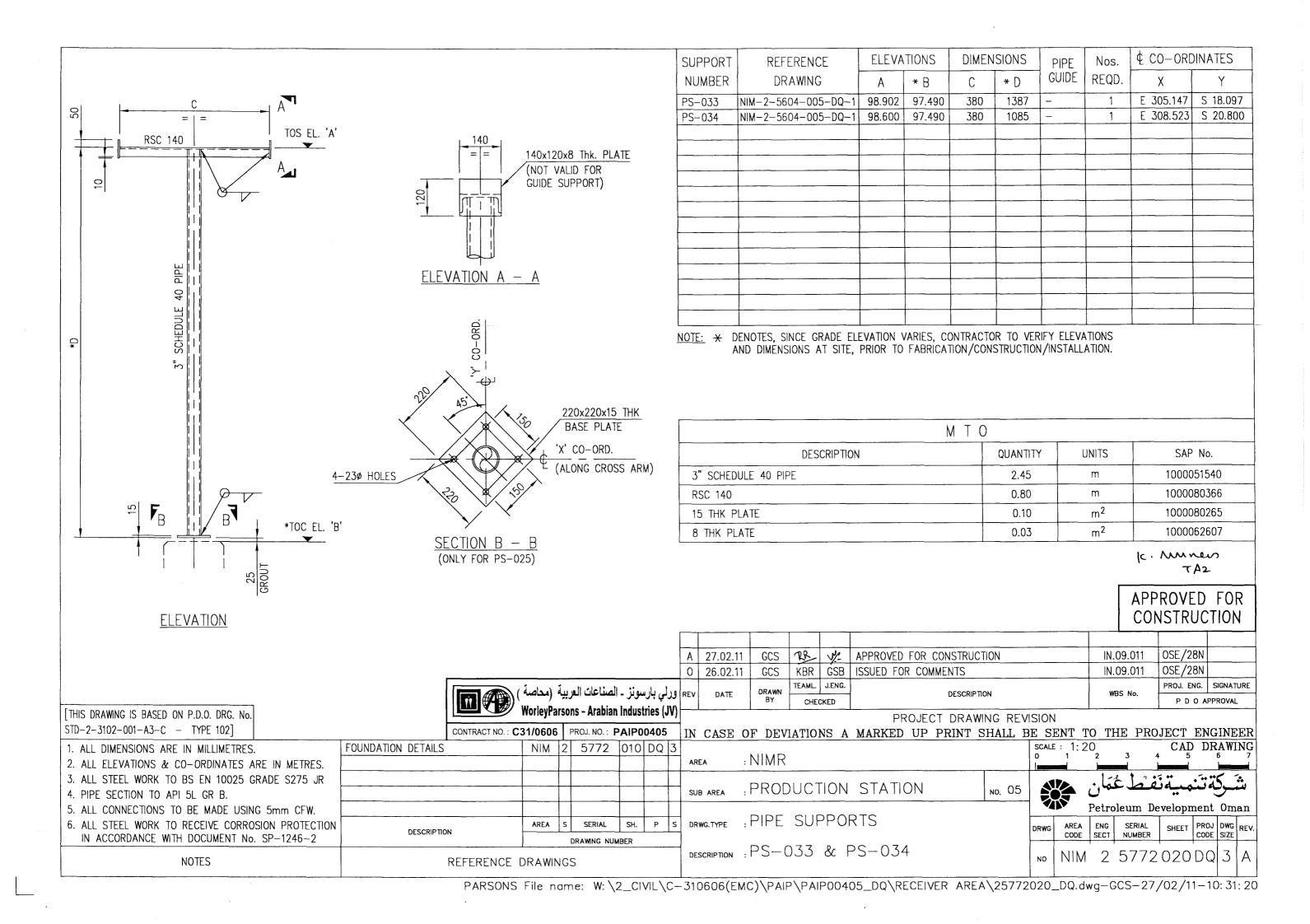
1c. Nuneus TAZ

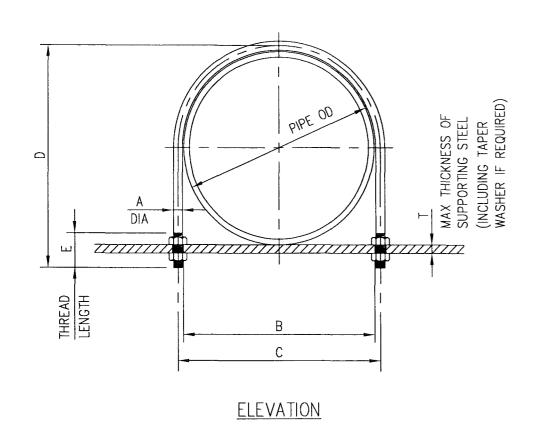
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D,	E/R*
PS-027 & 028	1	T10	1	24	24	925	21	125	700	125		
	2	T12	1	12	12	700	11	125	580			
	3	Т8	1	4	4	1975	51	450	450			
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Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm







	MATERIA	L GUID	E				
	BAR		NUTS				
SIZE	SAP No.	SIZE SAP No.					
8	1000080335	М8	1000063795				
10	1000062586	M10	1000063796				
16	1000062588	M16	1000063798				
20	N.A.	M20	1000063799				
24	N.A.	M24	1000120055				

	PIPE GUIDE	NOMINAL I	PIPE SIZE	PIPE			DIMEN	SIONS			Nos.
	DESIGNATION	INCHES	MM	OD	Α	В	Ċ	D	E	T	REQD.
	UB-0.5	1/2"	15	21.3	8	32	40	45	30	10	-
	UB-0.75	3/4"	20	26.7	8	37	45	55	35	10	_
	UB-1	1"	25	33.4	8	42	50	60	35	10	_
	UB-1.5	1 <sup>1</sup> /2"	40	48.3	10	55	65	85	45	16	
-	UB-2	2"	50	60.3	10	70	80	100	45	16	1
	UB-3	3"	80	88.9	16	94	110	140	60	19	
-	UB-4	4"	100	114.3	16	124	140	165	60	19	1
	UB-6	6"	150	168.3	20	175	195	225	70	19	_
	UB-8	8"	200	219.1	20	230	250	275	70	19	_
	UB-10	10"	250	273.0	20	285	305	335	75	22	_
	UB-12	12"	300	323.9	20	335	355	385	75	22	_
	UB-14	14"	350	355.6	24	366	390	425	80	22	
	UB-16	16"	400	406.4	24	416	440	475	80	22	_
	UB-18	18"	450	457.0	24	471	495	525	80	22	
	UB-20	20"	500	508.0	24	521	545	575	80	22	_
	UB-24	24"	600	610.0	24	621	645	675	80	22	_
	UB-28	28"	700	711.2	24	721	745	775	80	22	_
	UB-30	30"	750	762.0	24	771	795	825	80	22	_
				1,02.0	L	1			<u> </u>		

10. Muneus TA2

APPROVED FOR CONSTRUCTION

OSE/28N IN.09.011 A 27.02.11 GCS 28 APPROVED FOR CONSTRUCTION OSE/28N 0 26.02.11 IN.09.011 GCS KBR GSB ISSUED FOR COMMENTS TEAML J.ENG. PROJ. ENG. SIGNATURE DESCRIPTION P D O APPROVAL CHECKED PROJECT DRAWING REVISION

REV ورلي بارسونز - الصناعات العربية (محاصة WorleyParsons - Arabian Industries (JV)

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

DRAWING NUMBER

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER AREA

:NIMR

PRODUCTION STATION

NO. 05

CAD DRAWING Petroleum Development Oman

DRWG.TYPE : PIPE SUPPORTS

DESCRIPTION : 'U' BOLT (PIPE NOT GRIPPED) DETAILS

NO NIM 2 5772 021 DQ 3 A

STD-2-3818-001-A3-C - TYPE 818] 1. ALL DIMENSIONS ARE IN MILLIMETRES. 2. EACH BOLT TO BE SUPPLIED WITH 4 NUTS.

3. MATERIAL-BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8

[THIS DRAWING IS BASED ON P.D.O. DRG. No.]

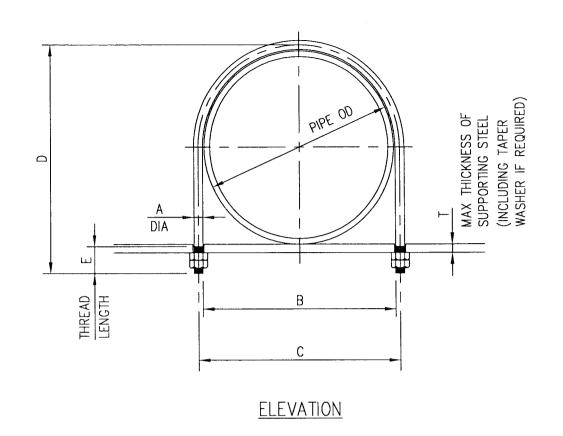
4. U-BOLT CORROSION PROTECTION SHALL COMPLY WITH SP-1246-2

NOTES

REFERENCE DRAWINGS

DESCRIPTION

PARSONS File name: W: \2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\RECEIVER AREA\25772021\_DQ.dwg-GCS-27/02/11-10: 31: 21



		MATE	ERIAL GUIDE				
	BAR		NUTS	LOCKNUTS			
SIZE	SAP NO No.	SIZE	SAP NO:	SIZE	SAP No.		
8	1000080335	М8	1000063795	М8	1000080222		
10	1000062586	M10	1000063796	M10	1000063819		
16	1000062588	M16	1000063798	M16	1000063820		
20	N.A.	M20	1000063799	M20	1000063821		
24	N.A.	M24	1000120055	M24	1000120066		

NOTES

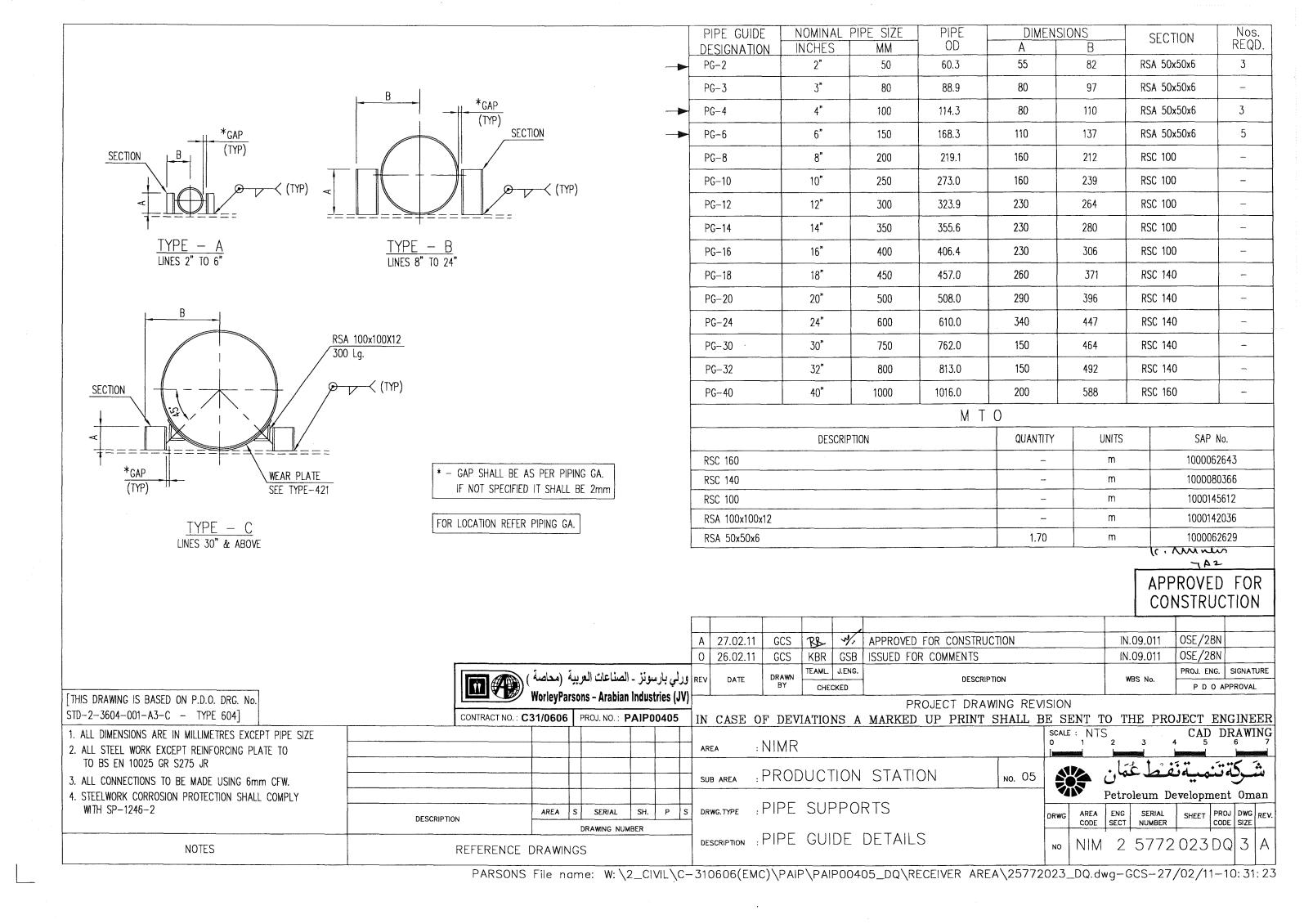
	PIPE GUIDE	NOMINAL	PIPE SIZE	PIPE			DIMEN	SIONS			Nos.
	DESIGNATION	INCHES	ММ	OD	Α	В	С	D	E	T	REQD.
	UG-0.5	1/2"	15	21.3	8	22	30	50	25	10	
	UG-0.75	3/4"	20	26.7	8	27	35	60	25	10	_
	UG-1	1"	25	33.4	8	37	45	65	25	10	
	UG-1.5	11/2"	40	48.3	10	50	60	90	35	16	
-	UG-2	2"	50	60.3	10	65	75	100	35	16	1
	UG-3	3"	80	88.9	16	89	105	150	50	19	-
-	UG-4	4"	100	114.3	16	119	135	175	50	19	2
	UG-6	6"	150	168.3	20	170	190	235	55	19	
	UG-8	8"	200	219.1	20	225	245	295	60	19	
	UG-10	10"	250	273.0	20	280	300	350	60	22	_
	UG-12	12"	300	323.9	20	330	350	400	60	22	_
	UG-14	14"	350	355.6	24	361	385	440	65	22	_
	UG-16	16"	400	406.4	24	411	435	490	65	22	_
	UG-18	18"	450	457.0	24	461	485	540	70	22	_
	UG-20	20"	500	508.0	24	516	540	590	70	22	_
	UG-24	24"	600	610.0	24	616	640	700	70	22	
	UG-28	28"	700	711.2	24	711	735	800	70	22	_
	UG-30	30"	750	762.0	24	766	790	850	70	22	

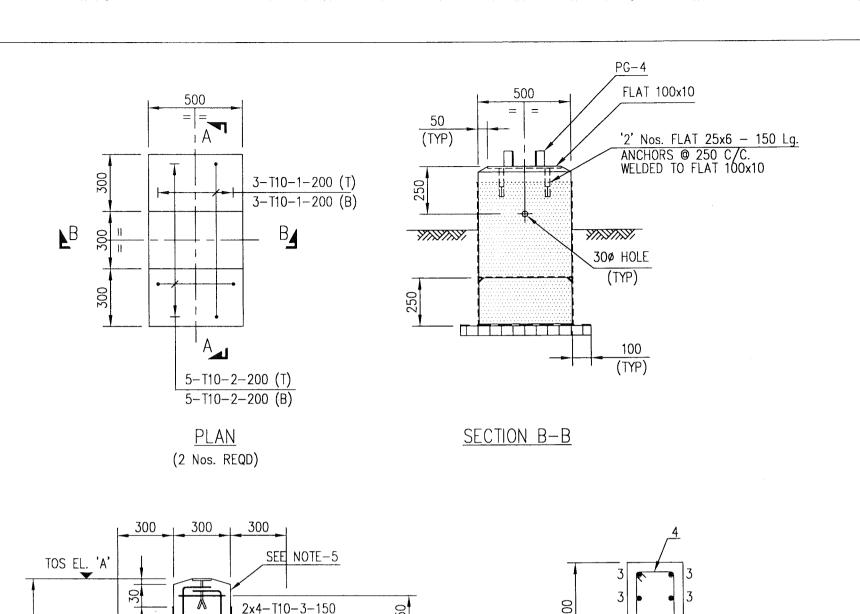
1c. Muneur 7A2

# APPROVED FOR CONSTRUCTION

A   27.02.11   GCS   QS   V!   APPROVED FOR CONSTRUCTION   IN.09.011   OSE/28N   O   26.02.11   GCS   KBR   GSB   ISSUED FOR COMMENTS   IN.09.011   OSE/28N   O   26.02.11   GCS   KBR   GSB   ISSUED FOR COMMENTS   IN.09.011   OSE/28N   O   26.02.11   GCS   KBR   GSB   ISSUED FOR COMMENTS   IN.09.011   OSE/28N   PROJ. EVAL.   LENG.   DESCRIPTION   OFFICE OF DEVIATIONS   OFFICE OF DEVIATIONS   OFFICE OFFI							i	1	1					k .		.1
						A 27	7.02.11	GCS	RR-	V.	APPROVED FOR CONSTRUCT	TION		IN.09.011	OSE/28N	
THIS DRAWING IS BASED ON P.D.O. DRG. No.   STD-2-3817-001-A3-D - TYPE 817										GSB	ISSUED FOR COMMENTS			IN.09.011	OSE/28N	
THIS DRAWING IS BASED ON P.D.O. DRG. No.   STD-2-3817-001-A3-D - TYPE 817   CONTRACT NO.: C31/0606   PROJ. NO.: PAIPO0405   IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT EN CAD DISCOMENSIONS ARE IN MILLIMETRES.  2. EACH BOLT TO BE SUPPLIED WITH 2 NUTS & 2 LOCKNUTS.  3. MATERIAL-BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8  4.U-BOLT CORROSION PROTECTION SHALL COMPLY    AREA   S SERIAL SH. P   S DRWG.TYPE   PIPE SUPPORTS   PRODUCTION SHALL COMPLY   SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTION SHEET PRODUCTIO			بية (محاصة	- الصناعات العرب	ورلی بارسونز ۔	<b></b>		DRAWN			DESCRIPTI	ON		WBS No.		
1. ALL DIMENSIONS ARE IN MILLIMETRES. 2. EACH BOLT TO BE SUPPLIED WITH 2 NUTS & 2 LOCKNUTS. 3. MATERIAL—BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8 4.U—BOLT CORROSION PROTECTION SHALL COMPLY  AREA S SERIAL SH. P S DRWG.TYPE : PIPE SUPPORTS  SCALE : — CAD DO 1 2 3 4 5 5 10 10 10 10 10 10 10 10 10 10 10 10 10	THIS DRAWING IS BASED ON P.D.O. DRG. No.		•		-	l i		В	CHECK	ED	PROJECT DRAW	ING REV	'ISION			
1. ALL DIMENSIONS ARE IN MILLIMETRES. 2. EACH BOLT TO BE SUPPLIED WITH 2 NUTS & 2 LOCKNUTS. 3. MATERIAL—BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8 4.U—BOLT CORROSION PROTECTION SHALL COMPLY  AREA S SERIAL SH. P S DRWG.TYPE : PIPE SUPPORTS  O 1 2 3 4 5  Petroleum Developmen  DRWG AREA S SERIAL SH. P S DRWG.TYPE : PIPE SUPPORTS	STD-2-3817-001-A3-D - TYPE 817]	CONTRACT NO. : C:	31/0606	PROJ. NO. : PA	AIP00405	IN CA	ASE OF	E DEVI	ATIONS	S A	MARKED UP PRINT S	SHALL E	BE SENT	TO THE PR	OJECT EN	NGINEE
2 LOCKNUTS.  3. MATERIAL-BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8  4.U-BOLT CORROSION PROTECTION SHALL COMPLY  AREA S SERIAL SH. P S DRWG.TYPE : PIPE SUPPORTS  DRWG AREA ENG SERIAL SHEET PRODUCTION SHALL COMPLY						AREA	: \	NIMR					SCALE : - 0 1	23	CAD 1.	ORAWING
4.U-BOLT CORROSION PROTECTION SHALL COMPLY  AREA S SERIAL SH. P S DRWG.TYPE : PIPE SUPPORTS  DRWG AREA ENG SERIAL SHEET PRO	2 LOCKNUTS.					SUB AR	REA : F	PROD	UCTI	ON	STATION	мо. 05		نطعمان ،	تنميةنة	شكة
DRAG CORE CECT MUNICIPAL CONTROL CONTR											- T-O	<u> </u>	AIV	Petroleum I	)evelopmer	nt Oman
WITH CD 404C 0		DESCRIPTION	AREA S	SERIAL	SH. P S	DRWG.T	YPE :	JIPE	SUP	40 H	R15				SHEET PRI	ROJ DWG RE
WITH SP-1246-2  DRAWING NUMBER  DESCRIPTION: 'U' BOLT (PIPE NOT GRIPPED) DETAILS  NO NIM 2 5772 022 DO					BER	DESCRIF	, РПОN :	u'BO	LT (F	PIPE	NOT GRIPPED) DE	ETAILS				

REFERENCE DRAWINGS





300

SECTION C-C

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

SLEEPER	LOCATION	ELEVA	TIONS	PIPE	Nos.
TYPE	DRAWING	Α	* B	GUIDE	REQD.
SL-001	NIM-2-5604-005-DQ-1	99.134	98.800	PG-4	1
SL-002	NIM-2-5604-005-DQ-1	99.123	98.800	PG-4	1

NOTE: \* DENOTES, SINCE GRADE ELEVATION VARIES, CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS AT SITE, PRIOR TO FABRICATION/CONSTRUCTION/INSTALLATION.

	M.T.O.		
DESCRIPTION	QUANTITY	UNITS	SAP No.
BLINDING CONCRETE	0.80	m <sup>3</sup>	N.A.
CONCRETE GRADE 35	0.41	m <sup>3</sup>	N.A.
FLAT 100x10	0.80	m	1000062581
FLAT 25x6	0.60	m	1000062571
REINFORCEMENT STEEL	37.05	Kg	N.A.
PROTECTIVE COATING	5.30	m <sup>2</sup>	N.A.
POLYTHENE SHEET 1000g	1.60	m <sup>2</sup>	N.A.

10. Muneus TA2

APPROVED FOR CONSTRUCTION

CAD DRAWING

OSE/28N APPROVED FOR CONSTRUCTION IN.09.011 BB V. GCS OSE/28N IN.09.011 GCS KBR GSB ISSUED FOR COMMENTS PROJ. ENG. SIGNATURE TEAML. J.ENG. DRAWN WBS No. DESCRIPTION DATE P D O APPROVAL CHECKED

A 27.02.11 0 26.02.11 | REV | ورلى بارسونز - الصناعات العربية (محاصة WorleyParsons - Arabian Industries (JV) PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

1. ALL DIMENSIONS ARE IN MILLIMETRES AND ELEVATIONS IN METRES.

SECTION A - A

2. CONCRETE TO BS 8110, GRADE 35 FOR REINFORCED CONCRETE, GRADE 10 FOR BLINDING CONCRETE USING OPC.

3. 50mm COVER TO REINFORCEMENT, REINFORCEMENT TO BS 4449.

4. TANGS WELDED TO WEAR PLATE USING 6mm CFW. AND EXPOSED STEEL WORK TO BE PAINTED IN ACC. WITH SP-1246-2

\*GRADE 'B'

25 CHAMFER

'FOSROC NITOCOTE PE 135'

OR EQUIVALENT (TYP)

IN 2 COATS WITH GLASS MAT

OR MASTER SEAL 550 OF DEGUSSA

5. ALL EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH TWO COATS OF "FOSROC DEKGUARD S" WITH A DFT OF 350 MICRONS OR ANY OTHER APPROVED EQUIVALENT.

250

50 THK BLINDING

CONCRETE LAID ON

1000g POLYTHENE SHEET

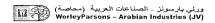
NOTES/REFERENCE DRAWINGS

6. FOR BAR BENDING SCHEDULE REFER DRG. No. NIM-2-5772-025-DQ-4 7. PIPE GUIDE DETAILS REFER DRG NO. NIM-2-5572-023-DQ-3

:NIMR AREA . NIMR SLUDGE PIT SYSTEM UPGRADE NO. 05 .PIPE SUPPORTS-SLEEPER DETAILS DESCRIPTION : SL-001 & 002

緣 Petroleum Development Oman PROJ DWG REV. ENG SERIAL SHEET CODE SECT NUMBER CODE SIZE NIM 2 5772024 DQI3 A

SCALE: 1:20



JOB NO.:

PA1P00405

Document No.: NIM-2-5772-025-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.:

SL-001&002

Prepared by:

GCS

Checked by:

PNG PS

REF. DWG NO.: NIM-2-5772-024-DQ-3

Date:

27.02.11

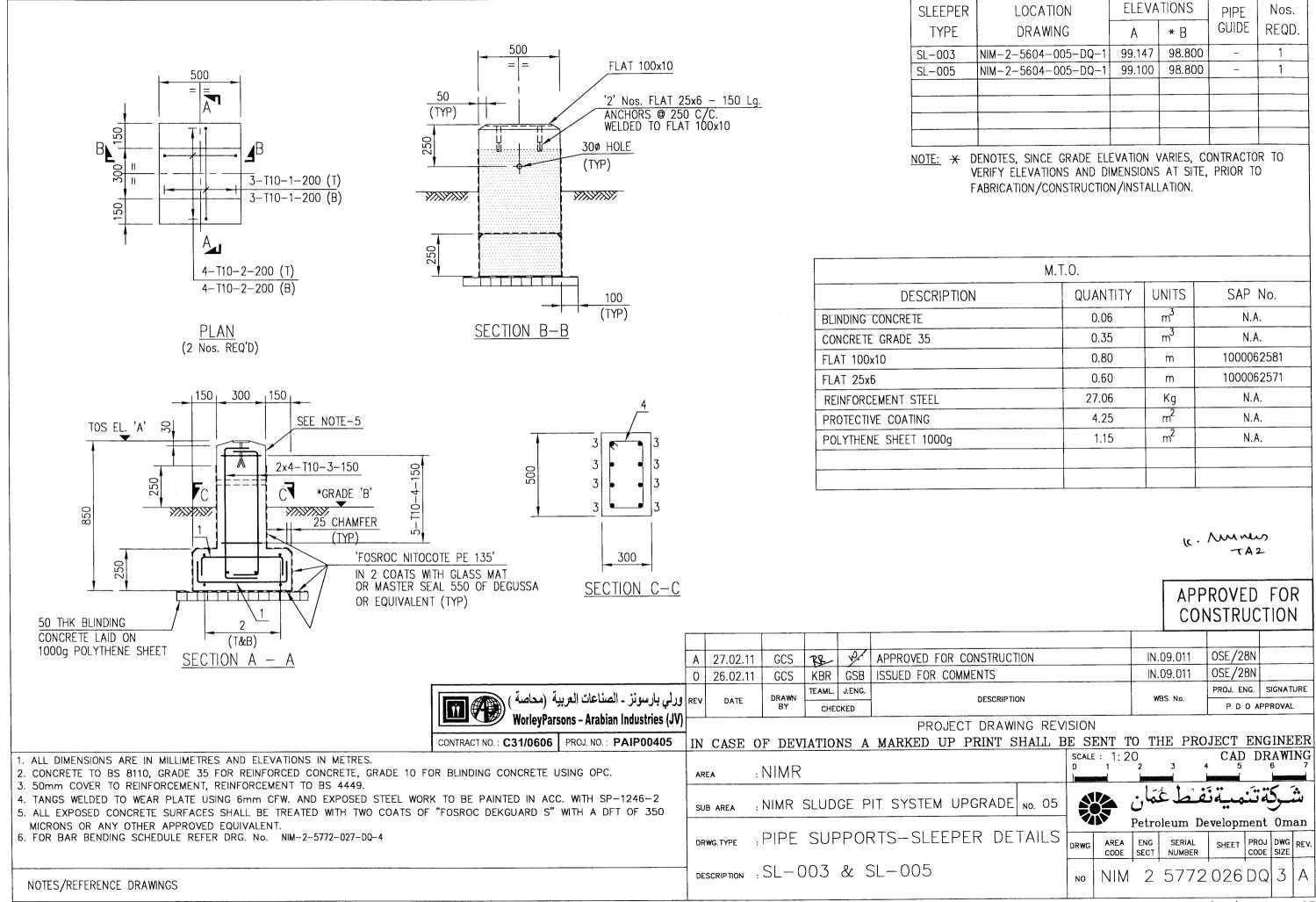
Total MTO for Rebars.

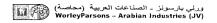
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			59.75					
Weight (Kgs)			37.05					
Total Weight (Kgs)	)							37.050

Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C <sup>*</sup>	D,	E/R*
SL-001&002	1	T10	2	6	12	1075	21	150	800	150		
	2	T10	2	10	20	675	21	150	400	150		
	3	T10	2	8	16	1225	21	200	700	350		
	4	T10	2	5	10	1375	51	200	400		:	
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- b Western to William And Milliam Co.				+	<b>†</b>			-				
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Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm





JOB NO.:

PAIP00405

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A

Document No.: NIM-2-5772-027-DQ-4

PART ID.: SL-003&005

GCS

Prepared by: Checked by:

PNG 22

Date:

27.02.11

REF. DWG NO.: NIM-2-5772-026-DQ-3

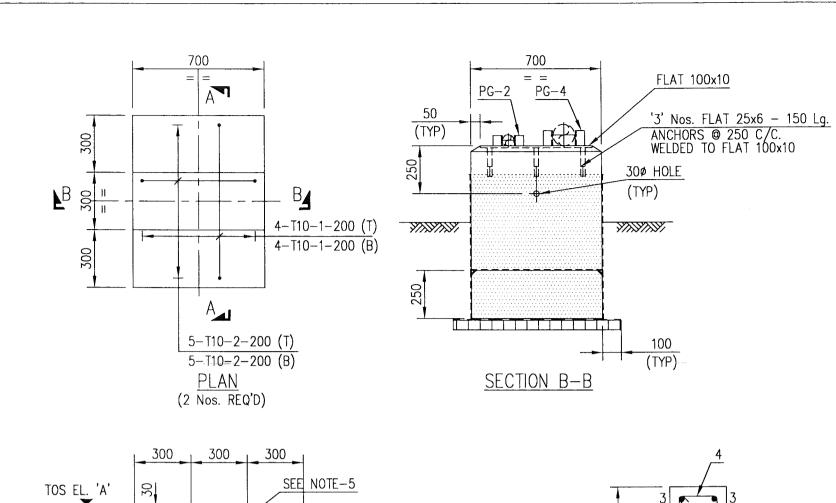
Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			43.65					
Weight (Kgs)			27.07					
Total Weight (Kgs)	)							27.070

Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	<b>A</b> *	В.	C,	D.	E/R*
SL-003&005	1	T10	2	6	12	775	21	150	500	150		
	2	T10	2	8	16	675	21	150	400	150		
	3	T10	2	4	8	1225	21	200	700	350		
	4	T10	2	5	10	1375	51	200	400			
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WAST 1888												
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Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm



5-T10-4-150

'FOSROC NITOCOTE PE 135'

OR EQUIVALENT (TYP)

IN 2 COATS WITH GLASS MAT OR MASTER SEAL 550 OF DEGUSSA

2x5-T10-3-150

2. CONCRETE TO BS 8110, GRADE 35 FOR REINFORCED CONCRETE, GRADE 10 FOR BLINDING CONCRETE USING OPC.

\*GRADE 'B'

25 CHAMFER

SLEEPER	LOCATION	ELEVA	TIONS	PIPE	Nos.
TYPE	DRAWING	Α	* B	GUIDE	REQD.
SL-004	NIM-2-5604-005-DQ-1	99.105	98.800	PG-4 & 2	1
SL-006	NIM-2-5604-005-DQ-1	99.090	98.800	-	1
					<u> </u>

NOTE: \* DENOTES, SINCE GRADE ELEVATION VARIES, CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS AT SITE, PRIOR TO FABRICATION/CONSTRUCTION/INSTALLATION.

М.Т	.O.		
DESCRIPTION	QUANTITY	UNITS	SAP No.
BLINDING CONCRETE	0.10	m <sup>3</sup>	N.A.
CONCRETE GRADE 35	0.57	m <sup>3</sup>	N.A.
FLAT 100x10	1.20	m	1000062581
FLAT 25x6	0.90	m	1000062571
REINFORCEMENT STEEL	47.71	Kg	N.A.
PROTECTIVE COATING	6.65	m <sup>2</sup>	N.A.
POLYTHENE SHEET 1000g	2.00	m <sup>2</sup>	N.A.

1c. Munus TA2

APPROVED FOR CONSTRUCTION

-	A	27.02.11	GCS	RS	4%	APPROVED FOR CONSTRUCTION	IN.09.011	OSE/28N	
	0	26.02.11	GCS	KBR	GSB	ISSUED FOR COMMENTS	IN.09.011	OSE/28N	
		F 4 TT	DRAWN	TEAML.	J.ENG.	DESCRIPTION	WBS No.	PROJ. ENG.	SIGNATURE
RI	EV	DATE	BY	CHE	CKED	DESCRIPTION	WD3 NO.	PDOA	PPROVAL

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER CAD DRAWING

: NIMR NIMR SLUDGE PIT SYSTEM UPGRADE No. 05

Petroleum Development Oman

AREA ENG SERIAL CODE SECT NUMBER PROJ DWG REV. SHEET CODE SIZE

| NIM | 2 5772 028 DQ| 3 | A

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405 AREA 4. TANGS WELDED TO WEAR PLATE USING 6mm CFW. AND EXPOSED STEEL WORK TO BE PAINTED IN ACC. WITH SP-1246-2 5. ALL EXPOSED CONCRETE SURFACES SHALL BE TREATED WITH TWO COATS OF "FOSROC DEKGUARD S" WITH A DFT OF 350

300

SECTION C-C

ورلي بارسونز - الصناعات العربية (محاصة WorlevParsons - Arabian Industries (JV)

PIPE SUPPORTS-SLEEPER DETAILS

DESCRIPTION : SL-004 & SL-006

NOTES/REFERENCE DRAWINGS

MICRONS OR ANY OTHER APPROVED EQUIVALENT.

7. PIPE GUIDE DETAILS REFER DRG NO. NIM-2-5572-023-DQ-3

50 THK BLINDING CONCRETE LAID ON

1000g POLYTHENE SHEET

YXXXXX

1. ALL DIMENSIONS ARE IN MILLIMETRES AND ELEVATIONS IN METRES.

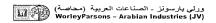
3. 50mm COVER TO REINFORCEMENT, REINFORCEMENT TO BS 4449.

6. FOR BAR BENDING SCHEDULE REFER DRG. No. NIM-2-5772-029-DQ-4

(T&B)

SECTION A - A

PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\RECEIVER AREA\25772028\_DQ.dwg-GCS-27/02/11-10:31:26



JOB NO.:

PAIP00405

Document No.: NIM-2-5772-029-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A

GCS

SL-004&006

Prepared by: Checked by:

PNG P

REF. DWG NO.: NIM-2-5772-028-DQ-3

Date:

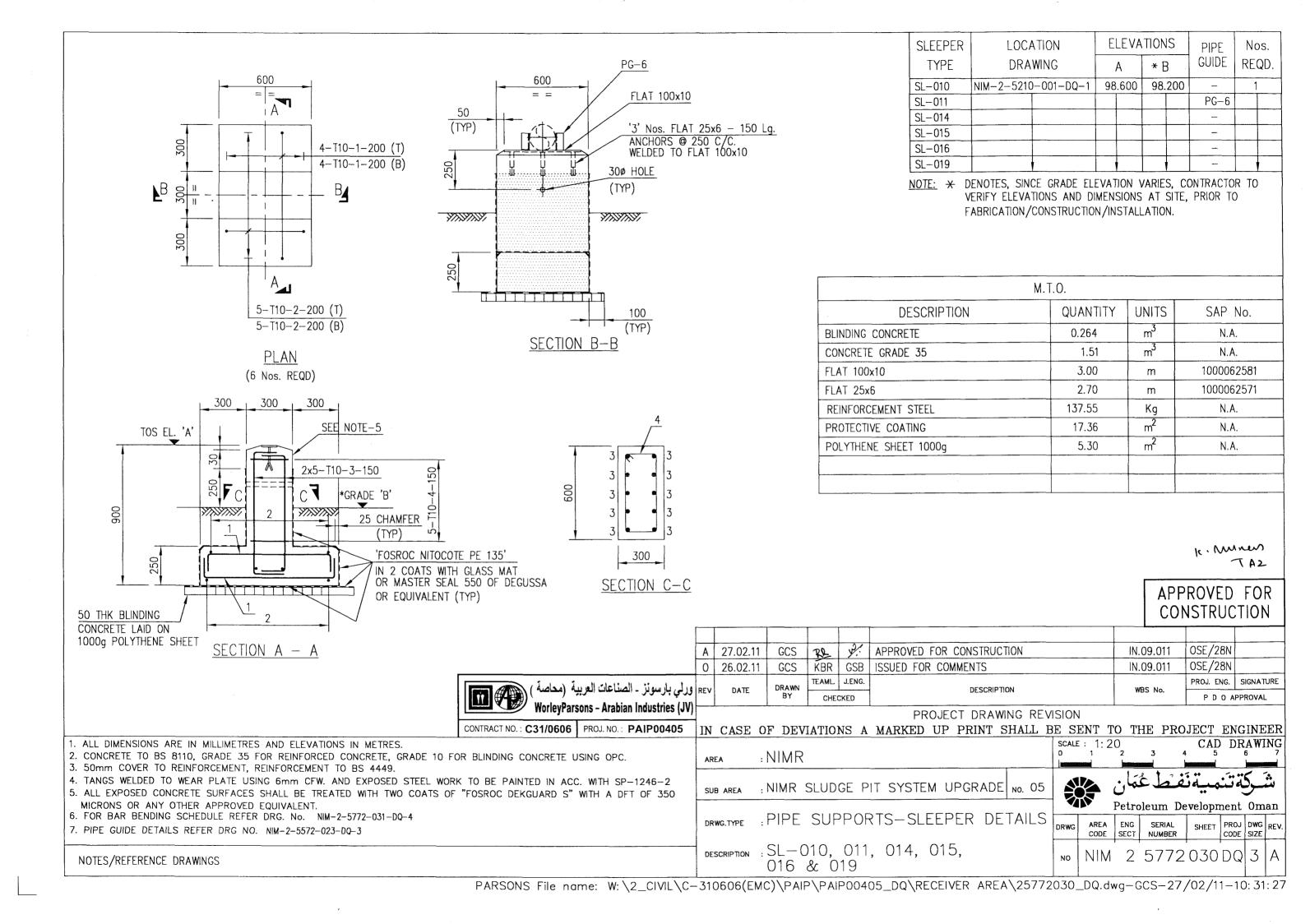
27.02.11

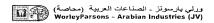
Total MTO for Rebars.

Dia. Of Bar	Т6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			76.95					
Weight (Kgs)			47.71					
Total Weight (Kgs)	)							47.710

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar †	Shape code	A*	B*	C <sup>*</sup>	D,	E/R*
SL-004&006	1	T10	2	8	16	1075	21	150	800	150		
	2	T10	2	10	20	875	21	150	600	150		
	3	T10	2	10	20	1225	21	200	700	350		
	4	T10	2	5	10	1775	51	200	600			74
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<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm





JOB NO.:

PAIP00405

Document No.: NIM-2-5772-031-DQ-4

PART ID.:

NIMR SLUDGE PIT SYSTEM UPGRADE

Revision No.: A Prepared by:

GCS

SLEEPER SUPPORTS

Checked by:

PNG PS

REF. DWG NO.: NIM-2-5772-030-DQ-3

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			221.85					
Weight (Kgs)			137.55					
Total Weight (Kgs	)			····				137.550

11-Myras

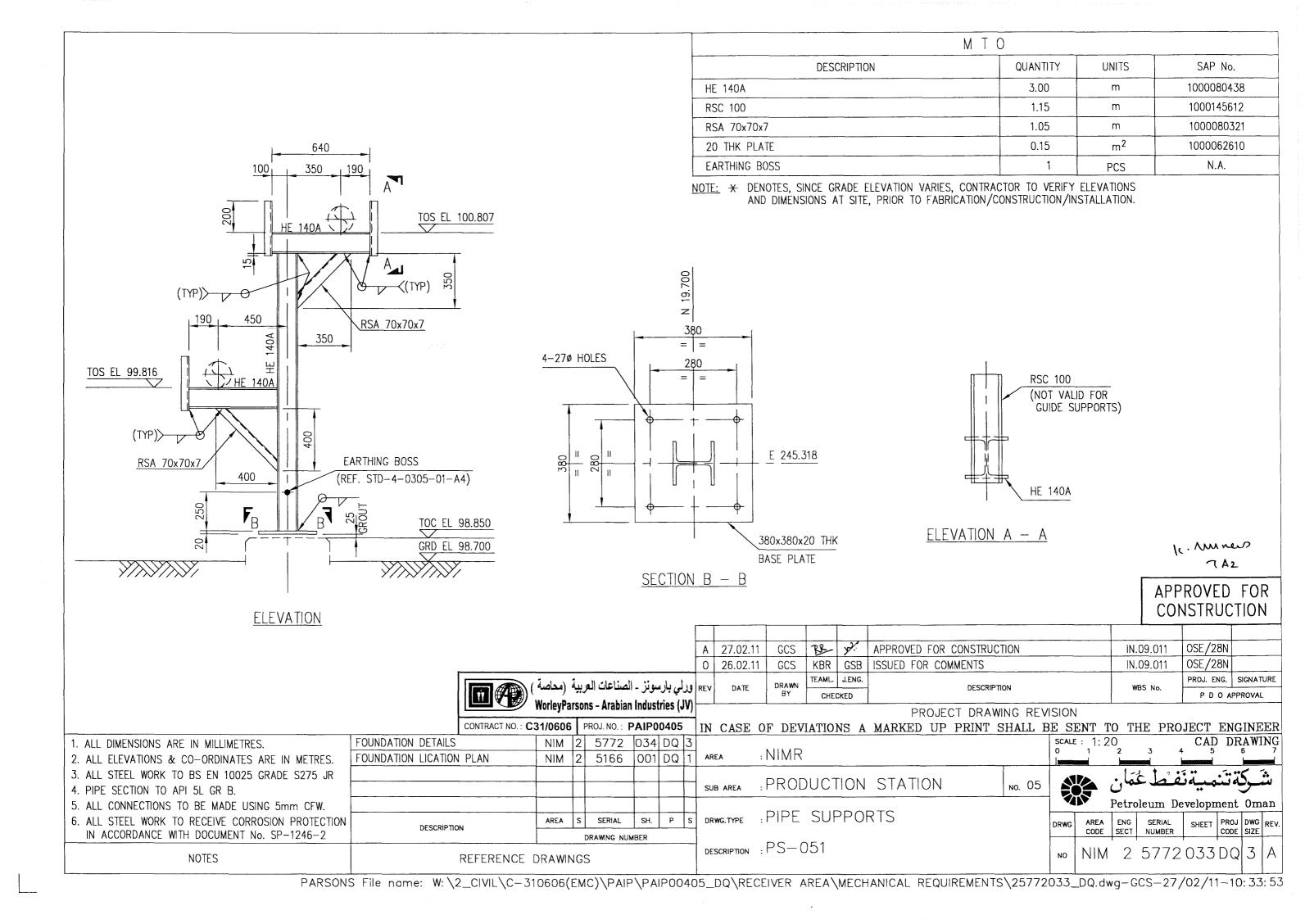
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C*	D*	E/R*
SL-010&011,014,	1	T10	6	8	48	1075	21	150	800	150		
015,016 & 019	2	T10	6	10	60	775	21	150	500	150		
	3	T10	6	10	60	1275	21	200	750	350		
	4	T10	6	5	30	1575	51	200	500			
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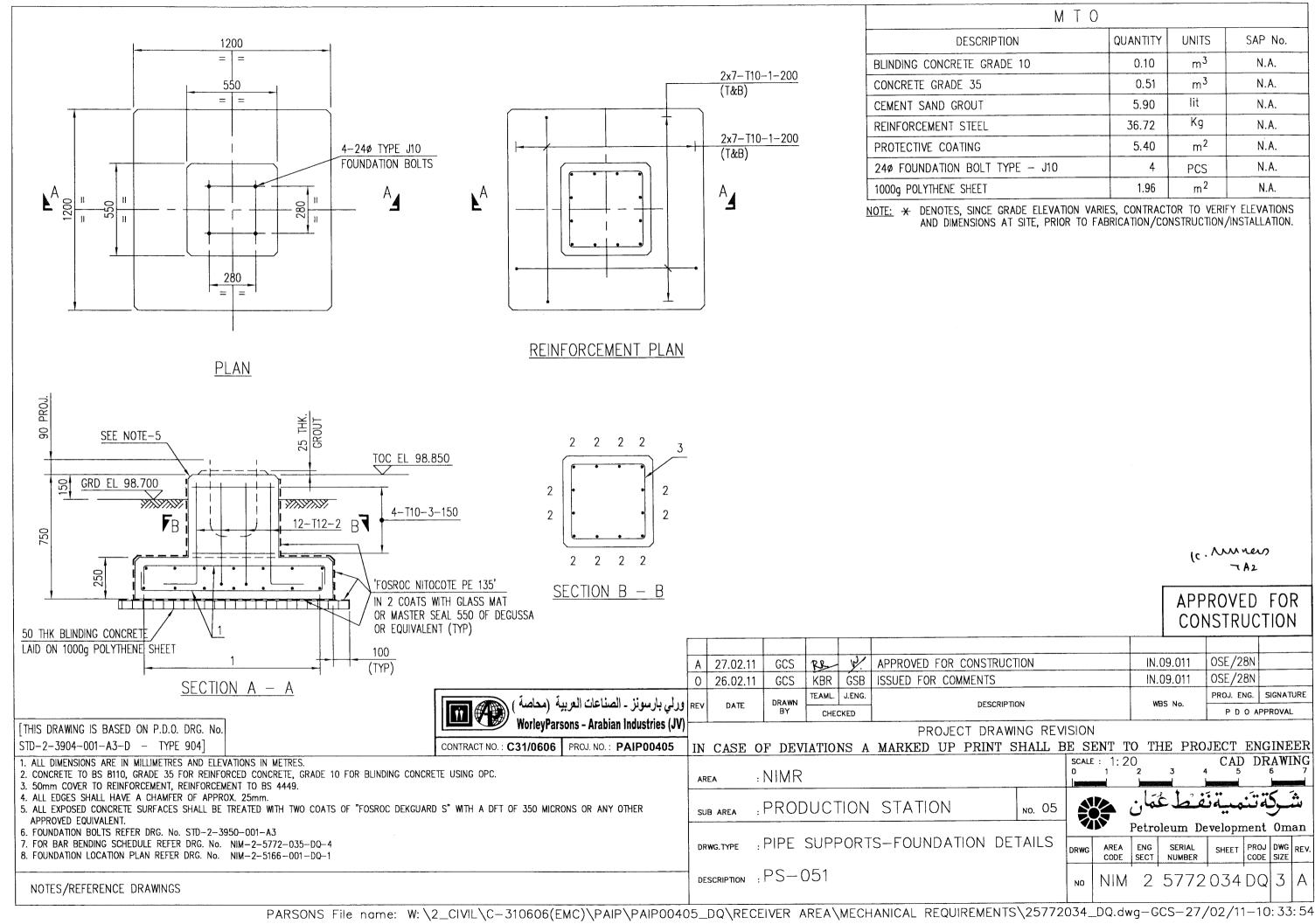
This schedule complies with BS 8666 : 2005 All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm

PIPE SUPPORT/	REFE	ERENCE DRAWI	NGS		PIPE SUPPORT/	REF	ERENCE DRAWI	NGS	
SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PLAN	REMARKS	SLEEPER NUMBER	STEELWORK DETAILS	SLEEPER/FOUNDATION DETAILS	LOCATION PLAN	REMARKS
PS-051	NIM-2-5772-033-DQ-3	NIM-2-5772-034-DQ-3	NIM-2-5166-001-DQ-1		PS-082	NIM-2-5772-048-DQ-3	NIM-2-5772-049-DQ-3	NIM-2-5166-001-D	Q-1 <u>-</u>
PS-052	NIM-2-5772-036-DQ-3	NIM-2-5772-037-DQ-3		_	PS-083				_
PS-053	NIM-2-5772-039-DQ-3	NIM-2-5772-040-DQ-3		_	PS-084				_
PS-054	NIM-2-5772-039-DQ-3	NIM-2-5772-040-DQ-3		_	PS-085				
PS-055	NIM-2-5772-042-DQ-3	NIM-2-5772-037-DQ-3		-	PS-086	NIM-2-5772-052-DQ-3		NIM-2-5167-001-D	Q-1 -
PS-056				SPARE	PS-087	NIM-2-5772-051-DQ-3	NIM-2-5772-049-DQ-3	NIM-2-5167-001-D	Q-1 -
PS-057	NIM-2-5772-039-DQ-3	NIM-2-5772-040-DQ-3	NIM-2-5166-001-DQ-1	_					
PS-058				_	U BOLT DET.	NIM-2-5772-055-DQ-3	_	_	
PS-059				_		_	_	_	
PS-060				_	_	_	_	_	
PS-061				_					
PS-062				_					
PS-063				SPARE					
PS-064	NIM-2-5772-045-D0-3	NIM-2-5772-043-DQ-3	NIM-2-5166-001-DQ-1	-					
PS-065		NIM-2-5772-043-DQ-3		_	SL-001	_	NIM-2-5774-005-DQ-3	NIM-2-5166-001-D	Q-1 -
PS-066	NIM-2-5775-006-DQ-1	_		_	SL-002	_	NIM-2-5772-053-DQ-3		_
PS-067	NIM-2-5772-047-DQ-3		NIM-3-5085-001-DQ-1	_	SL-003				
PS-068	NIM-2-5775-006-DQ-1	_	NIM-2-5166-001-DQ-1		SL-004	_			_
PS-069	NIM-2-5775-006-DQ-1		TAIN E GIOG GOI BQ I		SL-005	_		NIM-2-5167-001-D	Q-1 -
PS-070		NIM-2-5772-040-DQ-3		_	SL-006	_			_
PS-071		NIM-2-5772-043-DQ-3		_	SL-007	_			_
PS-072		NIM-2-5772-043-DQ-3			SL-008	_			_
PS-073		NIM-2-5772-043-DQ-3			SL-009	_		NIM-2-5166-001-D	0-1 -
PS-074	141M Z 377Z 043 DQ 3	INTIN Z 377Z 0+3 DQ 3		SPARE	SL-010			NIM-2-5166-001-D	
PS-075				SPARE	OL 010				
PS-076	NIM-2-5772-048-DO-3	NIM-2-5772-049-DQ-3	NIM-2-5166-001-D0-1	- SI 711C					1c. Munus
PS-077	1414 Z 077Z 070 DQ 0	141141 2 3772 013 84 3	141141 2 0100 001 BQ 1	_					7A2
PS-078			;	_					APPROVED FOR
PS-079				_					CONSTRUCTION
PS-080				_					
PS-081				_	A 27.02.11	GCS TB YM APPF	ROVED FOR CONSTRUCTION	IN	.09.011 OSE/28N
13-001		1			0 26.02.11	+	ED FOR COMMENTS	IN	.09.011 OSE/28N
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				orleyParsons - Arabian Indus	·	BY CHECKED		25,40,011	P D O APPROVAL
				/0606 PROJ. NO.: PAIPO		AT TATIONS A MAT	PROJECT DRAWING		HE PROJECT ENGINEE
			CONTRACT NO.: CS 1	TOUGH PROJ. NO. : PAIFE	IN CASE C	TAM A CHUITAIVAU TI	KED OF FRIMI SHAL	SCALE : NTS	CAD DRAWIN
					AREA :	NIMR	·	0 1 2	3 4 5 6
					SUB AREA :	PRODUCTION ST	ATION NO.	رة الله عن الله الله الله الله الله الله الله الل	شكةتنميةنفطع
								Petro	oleum Development Omar
	SHALL REFER PIPING PLAN ,I	1	DESCRIPTION	AREA S SERIAL SH.	P S DRWG.TYPE :	PIPE SUPPORTS	(RECEIVER)	DRWG AREA ENG CODE SECT	SERIAL SHEET PROJ DWG RE CODE SIZE
FABRICATION, IN	NSTALLATION OF PIPE SUPPO NOTES	CIAU	REFERENCE DR	DRAWING NUMBER	DESCRIPTION :	INDEX SHEETS			5772032DQ 3 A
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JOB NO.:

PAIP00238

PART ID.:

PRODUCTION STATION

Document No.: NIM-2-5772-035-DQ-4

Revision No.: A

GCS

Prepared by: Checked by:

PNG BB

Date:

27.02.11

REF. DWG NO.: NIM-2-5772-034-DQ-3

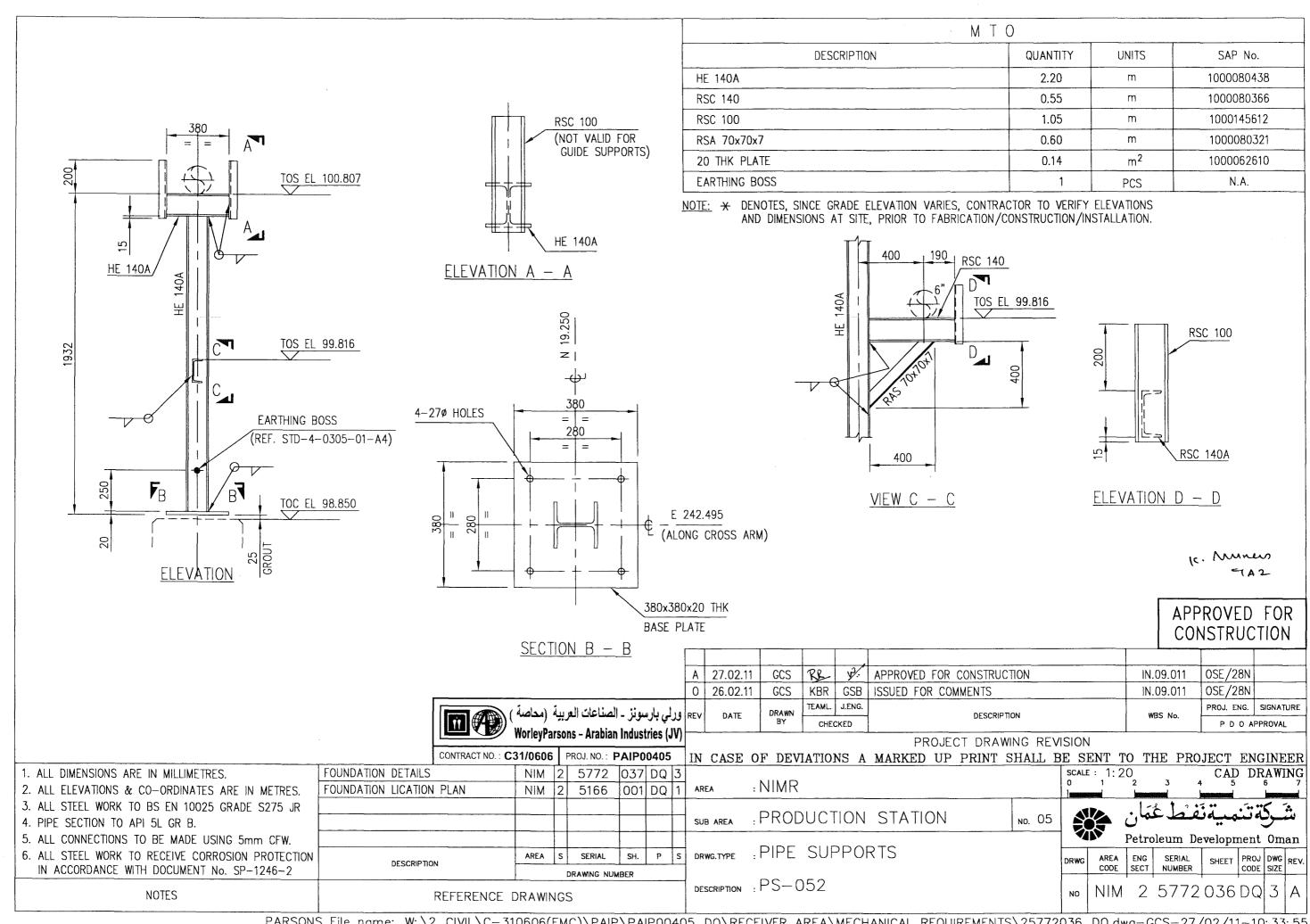
Total MTO for Rebars.

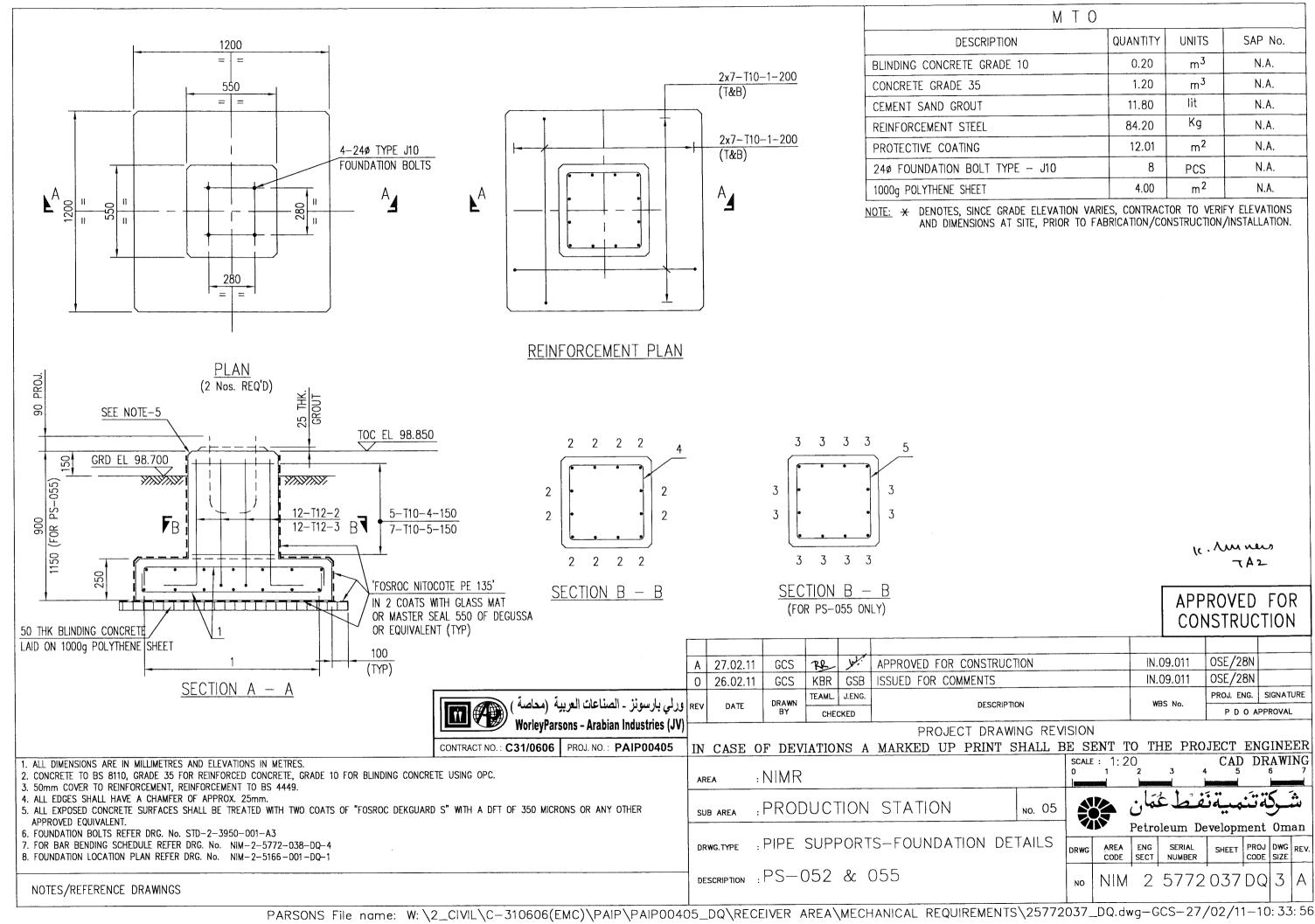
Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			45.00	9.90				
Weight (Kgs)			27.90	8.82				
Total Weight (Kgs)	)							36.720

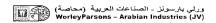
36.720

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	В.	C*	D.	E/R*
PS-051	1	T10	1	28	28	1325	21	125	1100	125		
	2	T12	1	12	12	825	11	200	630			
	3	T10	1	4	4	1975	51	450	450			
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<sup>\*</sup> Specified in multiples of 5 mm







JOB NO.: PART ID.: PA1P00238

PRODUCTION STATION

Document No.: NIM-2-5772-038-DQ-4

Revision No.: A

Prepared by: GCS

PNG RA Checked by:

Date:

REF. DWG NO.: NIM-2-5772-037-DQ-3

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			97.90	26.40				
Weight (Kgs)			60.70	23.50				
Total Weight (Kgs	)		,					84.200

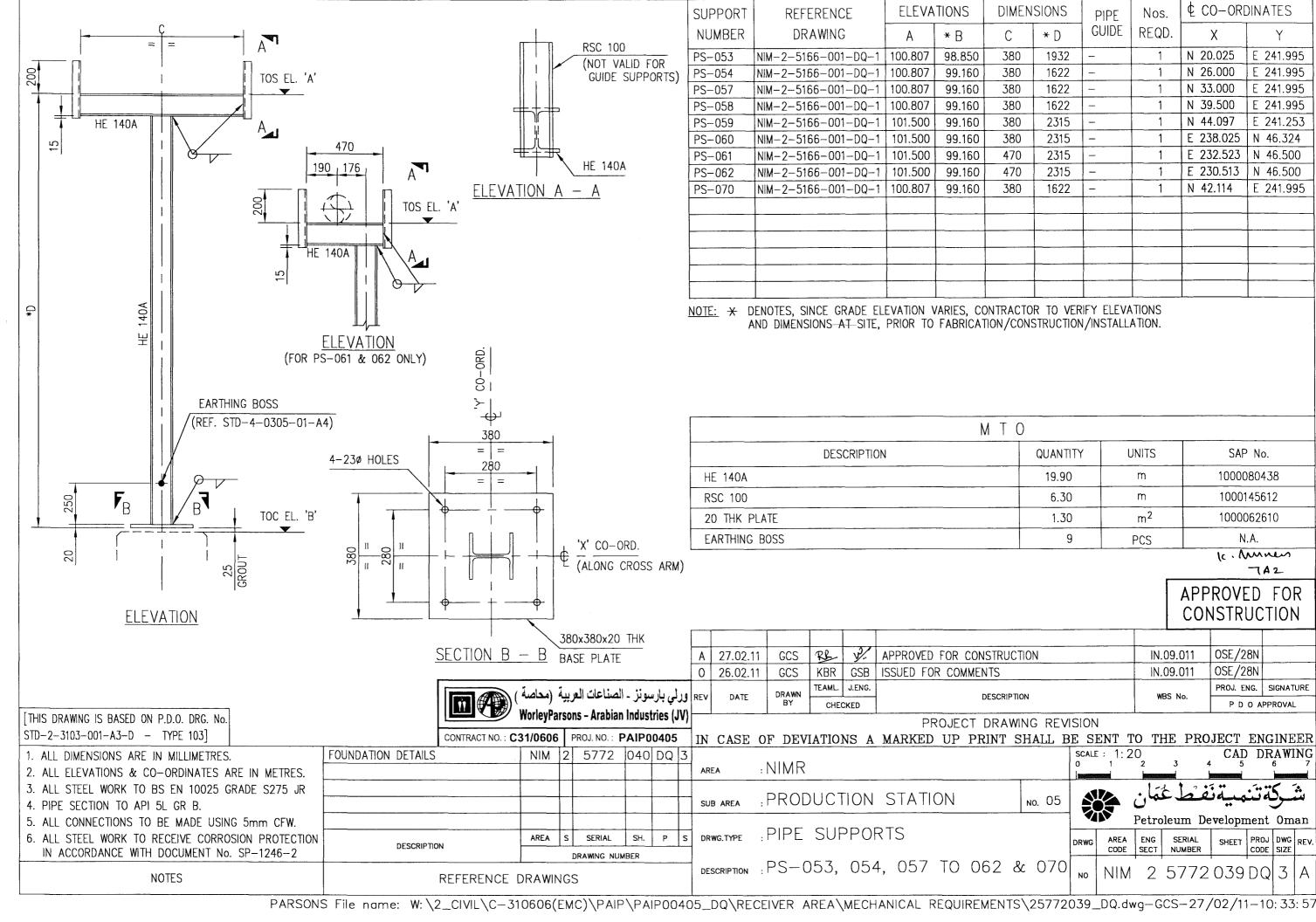
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A.	В*	C*	D,	E/R*
PS-052 & 055	1	T10	2	28	56	1325	21	125	1100	125		
	2	T12	1	12	12	975	11	200	780			
	3	T12	1	12	12	1225	11	200	1030	lan sai : Mara ya		
	4	T10	1	5	5	1975	51	450	450			
	5	T10	1	7	7	1975	51	450	450			
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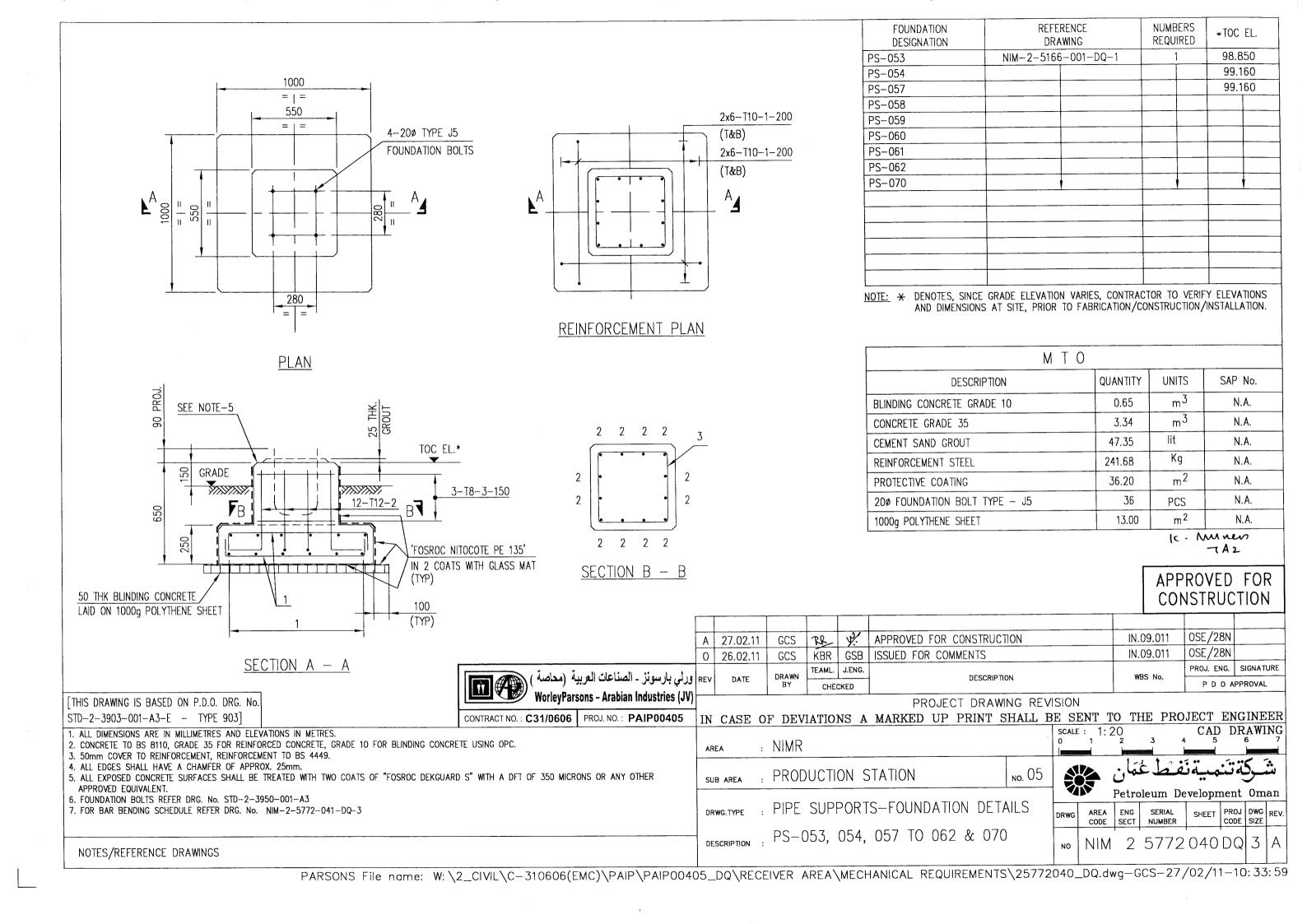
This schedule complies with BS 8666: 2005

All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm







JOB NO.: PART ID.: PAIP00238

REF. DWG NO.: NIM-2-5772-040-DQ-3

PRODUCTION STATION

Document No.: NIM-2-5772-041-DQ-4

Revision No.: A

Prepared by: GCS

Checked by: PNG PNG

Date:

27.02.11

Total MTO for Rebars.

Dia. Of Bar	T6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		53.33	243.00	78.30				
Weight (Kgs)		21.33	150.66	69,69				
Total Weight (Kgs)	)							241.680

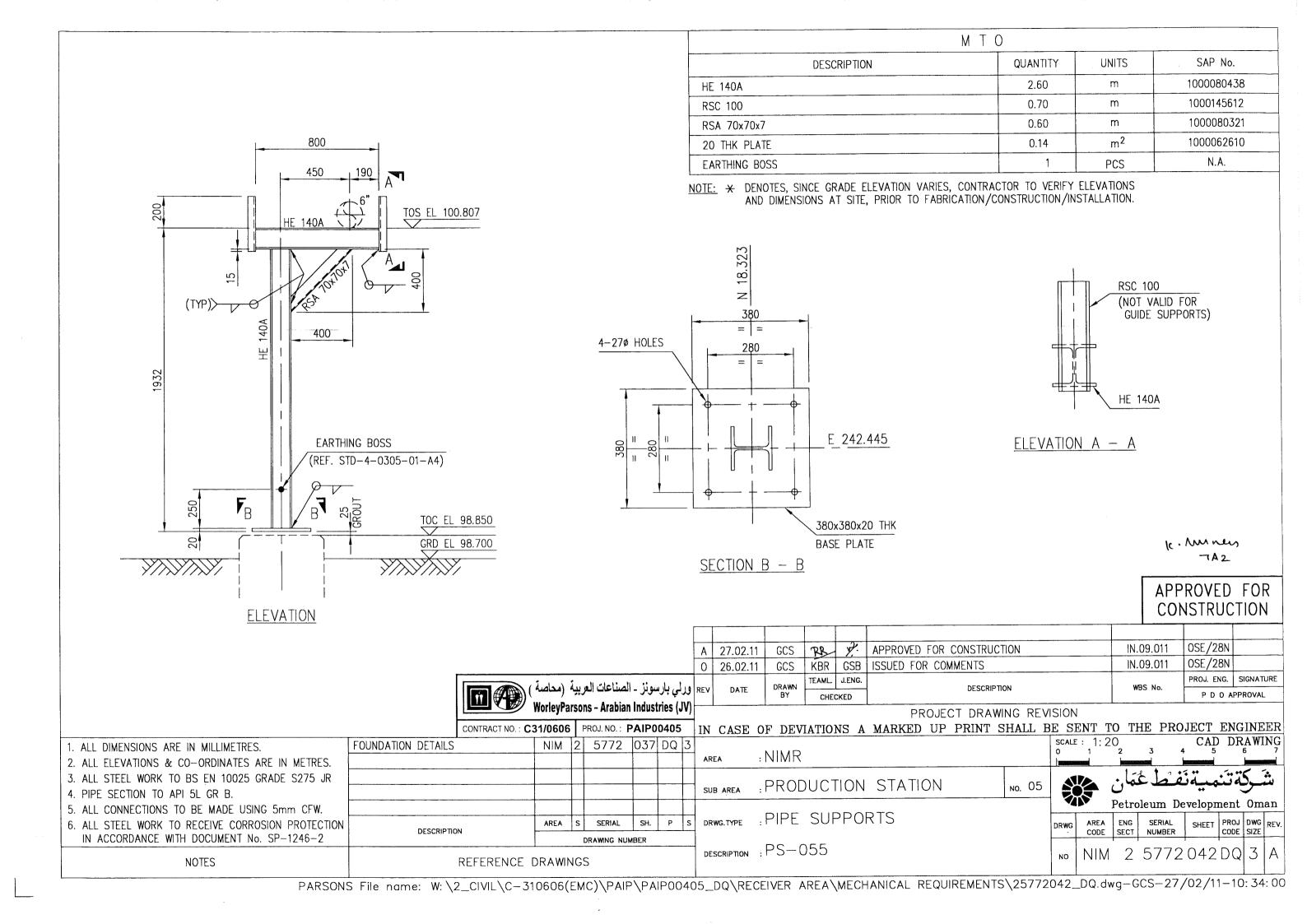
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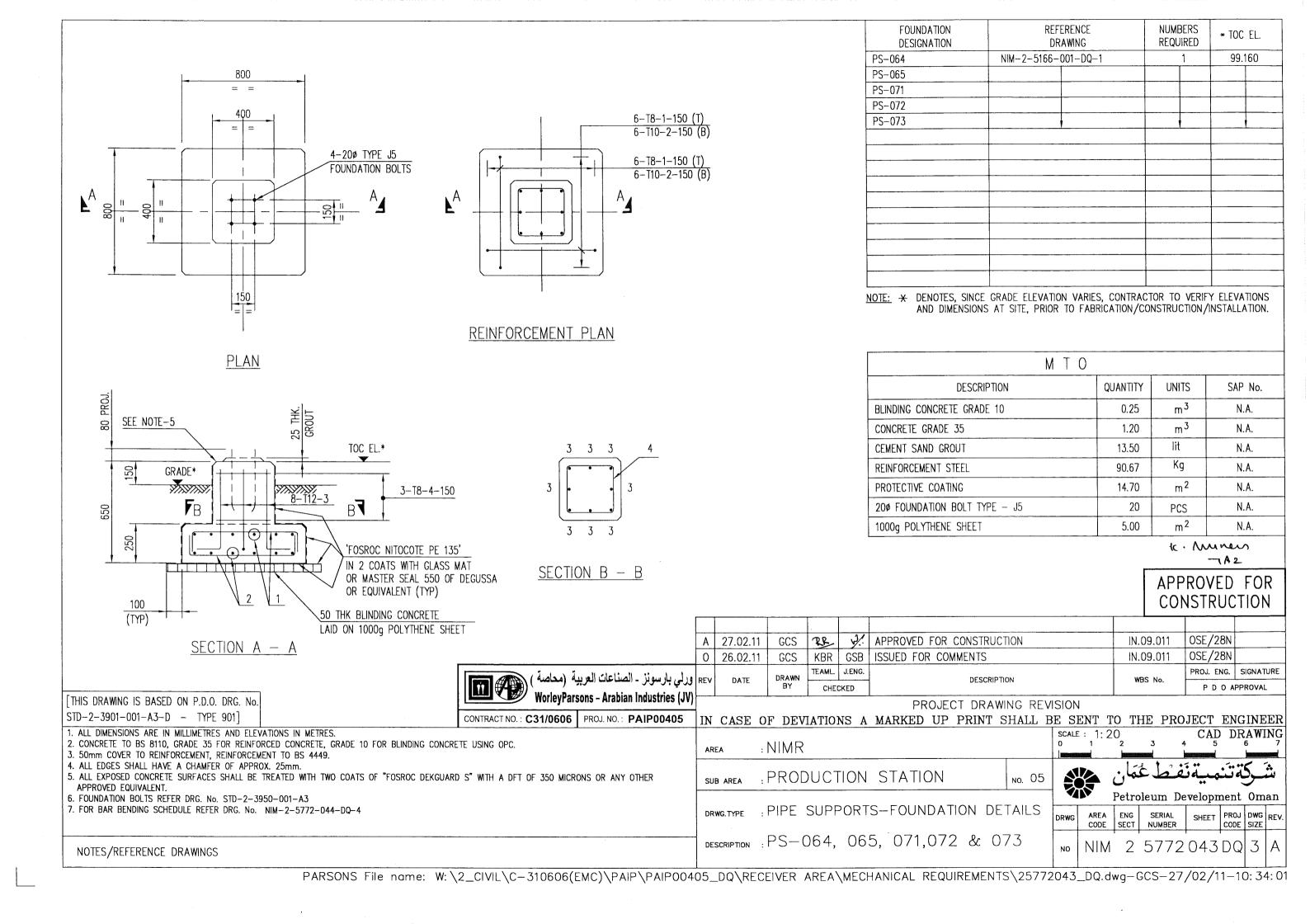
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A.	B*	C,	D,	E/R*
PS-053, 054,	1	T10	9	24	216	1125	21	125	900	125		
057 TO 062 & 070	2	T12	9	12	108	725	11	200	530			
	3	Т8	9	3	27	1975	51	450	450			
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F-04	1			† <del></del>								·
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This schedule complies with BS 8666 : 2005 All dimensions are in mm

Refer to Bar shape Code drawing

\* Specified in multiples of 5 mm † Specified in multiples of 25 mm







JOB NO.:

PAIP00238

PART ID.:

PRODUCTION STATION

Document No.: NIM-2-5772-044-DQ-4

Revision No.:

Prepared by: Checked by: GCS PNG

Date:

27.02.11

REF. DWG NO.: NIM-2-5772-043-DQ-3

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		76.13	55.50	29.00				
Weight (Kgs)		30.45	34.41	25.81				
Total Weight (Kgs)	)							90.670

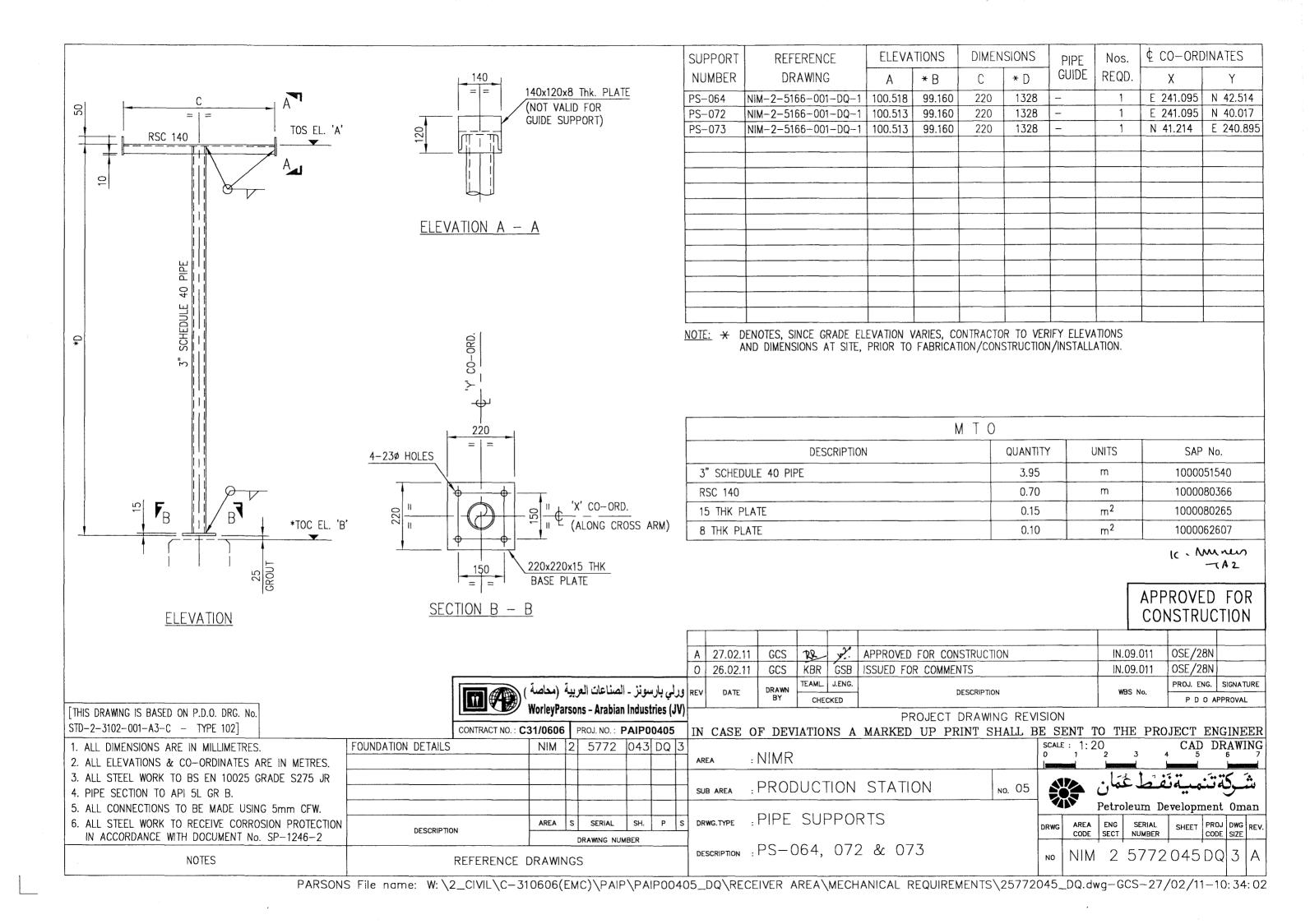
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	В*	C,	D,	E/R*
PS-064, 065, 071,	1	Т8	5	12	60	925	21	125	700	125		
072 & 073	2 -	T10	5	12	60	925	21	125	700	125		
	3	T12	5	8	40	725	11	200	530	1. 1. 1.		
	4	Т8	5	3	15	1375	51	300	300			
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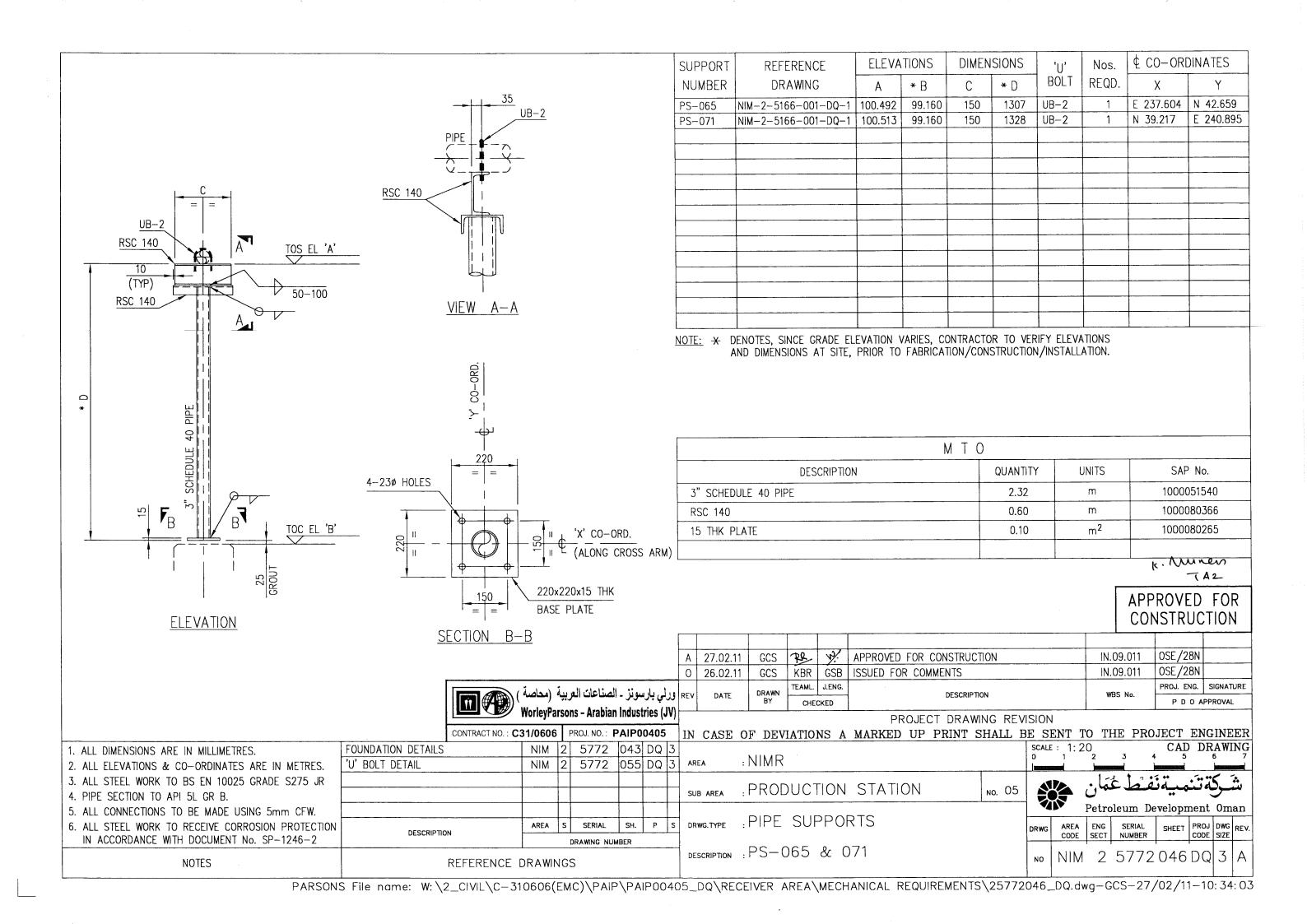
This schedule complies with BS 8666: 2005

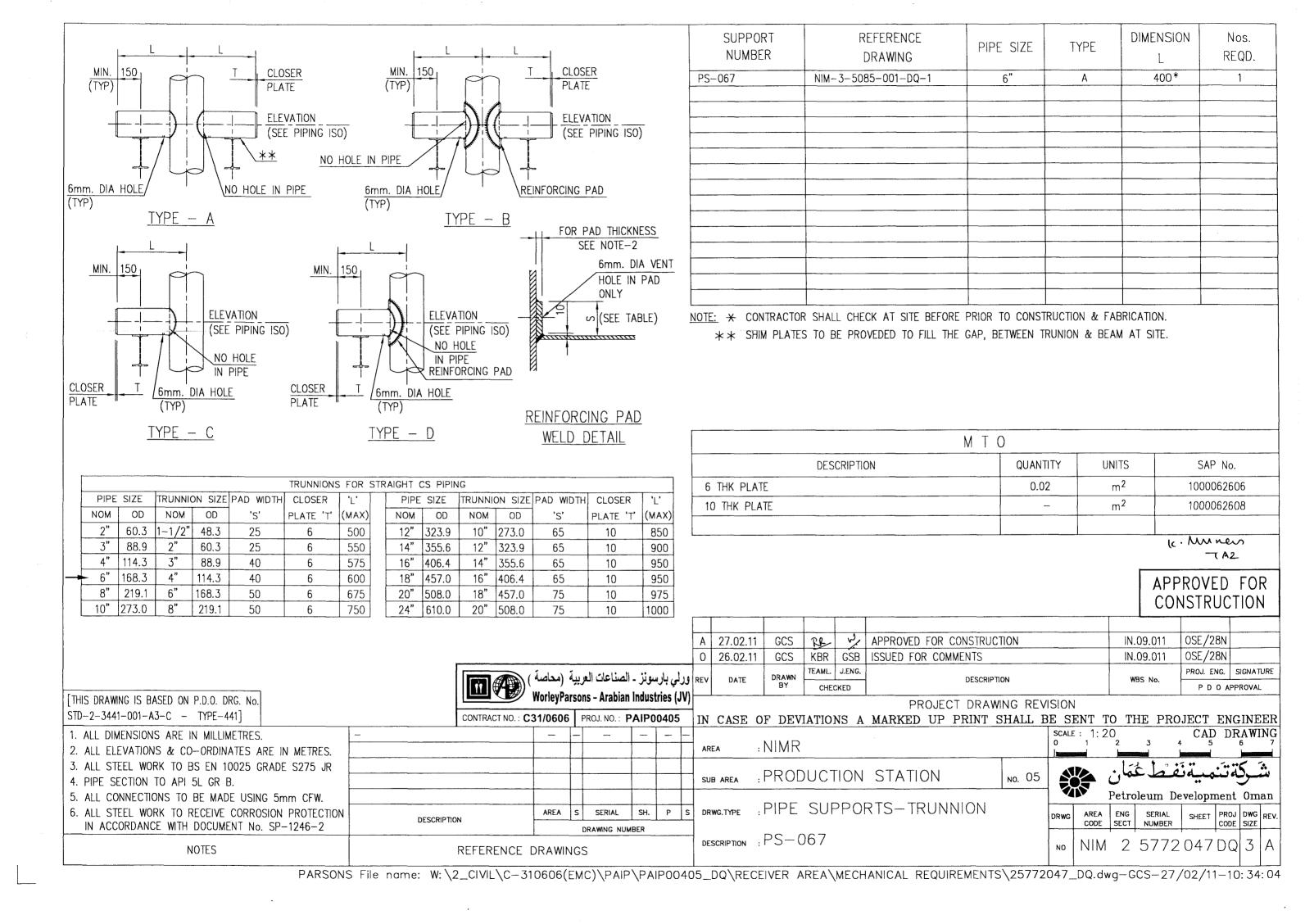
All dimensions are in mm

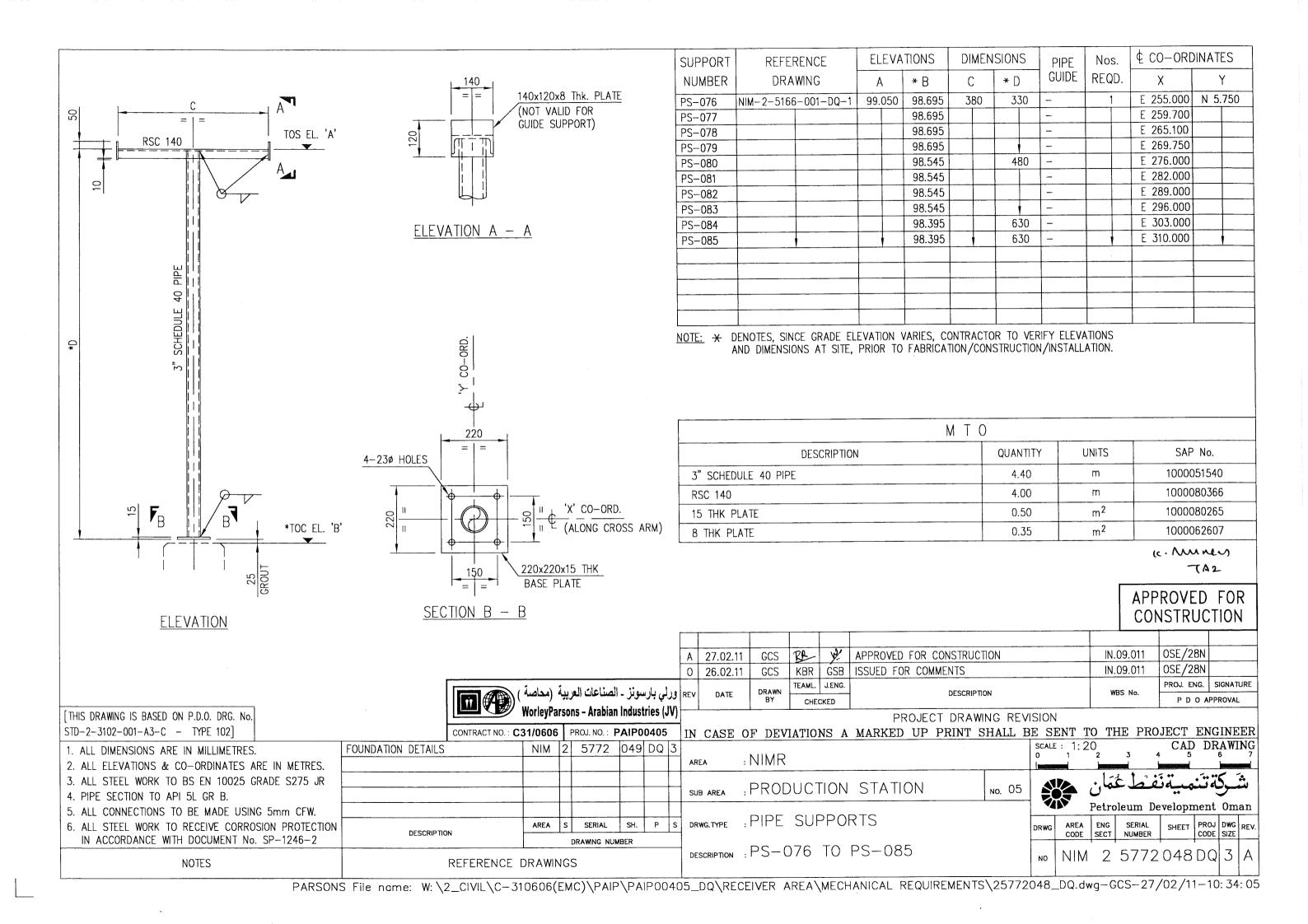
Refer to Bar shape Code drawing

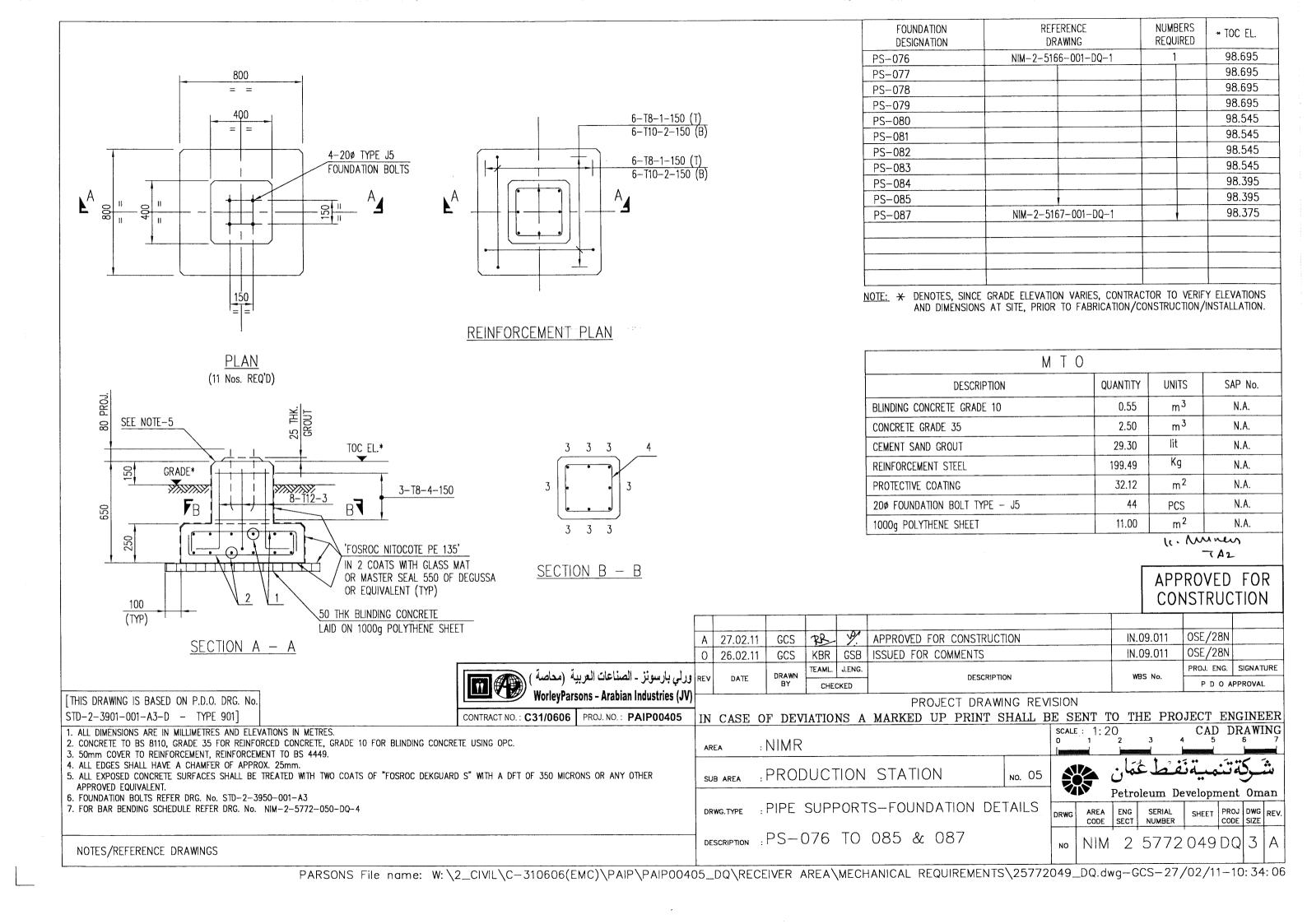
\* Specified in multiples of 5 mm













JOB NO.: PART ID.: PAIP00238

PRODUCTION STATION

Document No.: NIM-2-5772-050-DQ-4

Revision No.:

GCS

Prepared by: Checked by:

PNG 12

Date:

27.02.11

REF. DWG NO.: NIM-2-5772-049-DQ-3

Total MTO for Rebars.

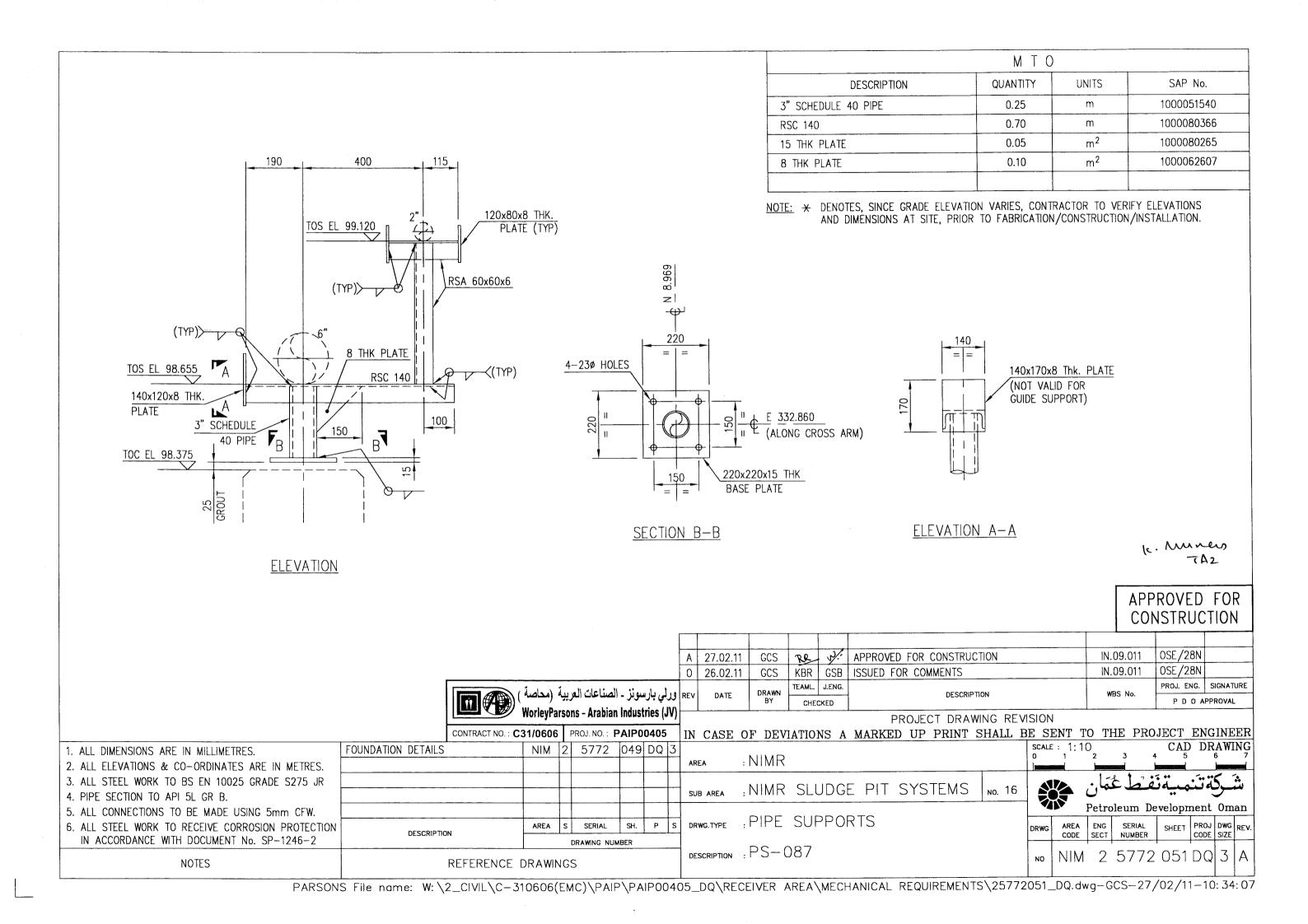
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		167.48	122.10	63.80				
Weight (Kgs)	_	66.99	75.71	56.79				
Total Weight (Kgs)	)							199.490

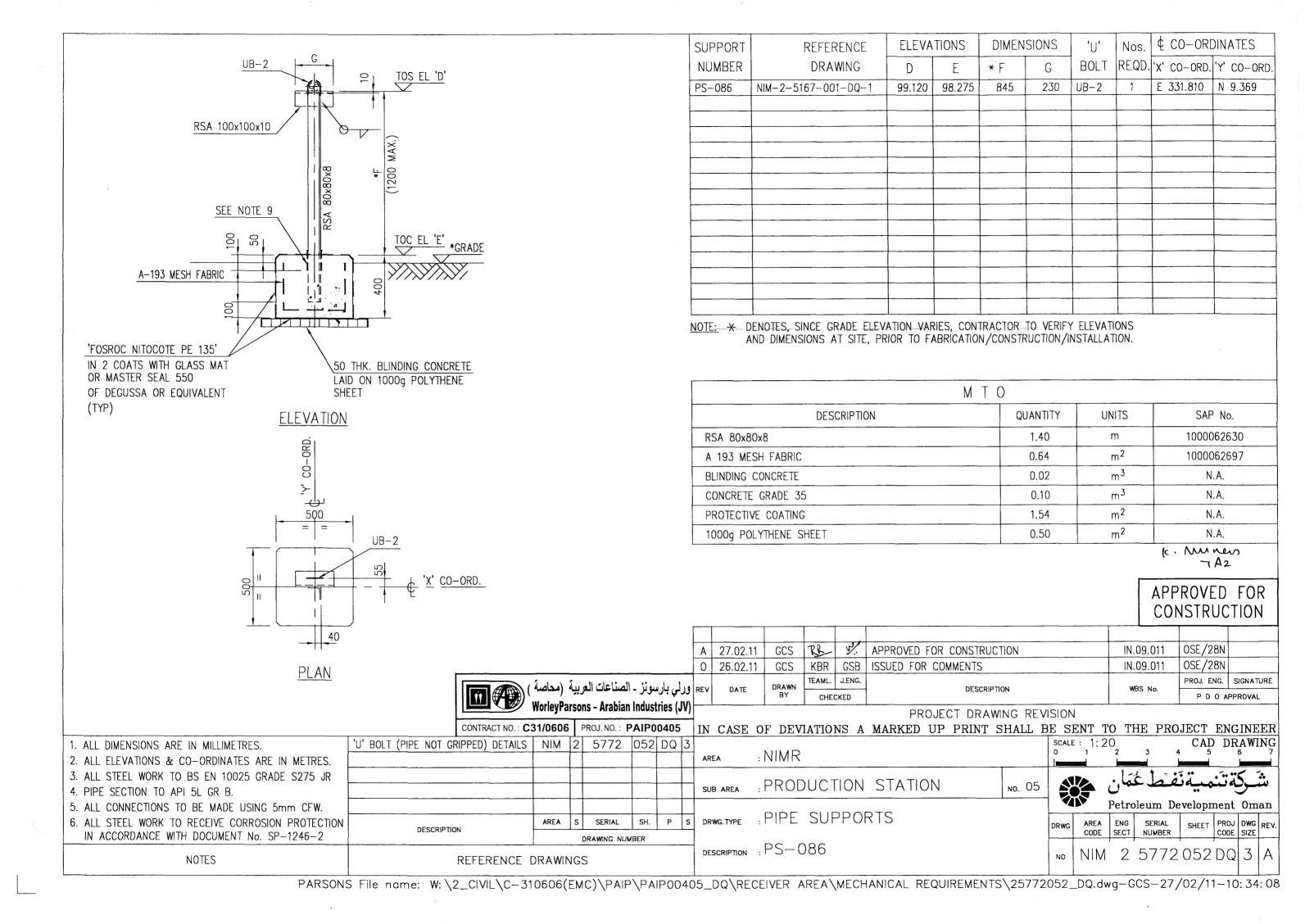
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar †	Shape code	A*	B*	C*	D,	E/R*
PS-076 TO 085	1	Т8	11	12	132	925	21	125	700	125		
AND 87	2	T10	11	12	132	925	21	125	700	125		ding alakar. Medalik
	3	T12	11	8	88	725	11	200	530			
	4	Т8	11	3	33	1375	51	300	300			
												i
											<u> </u>	

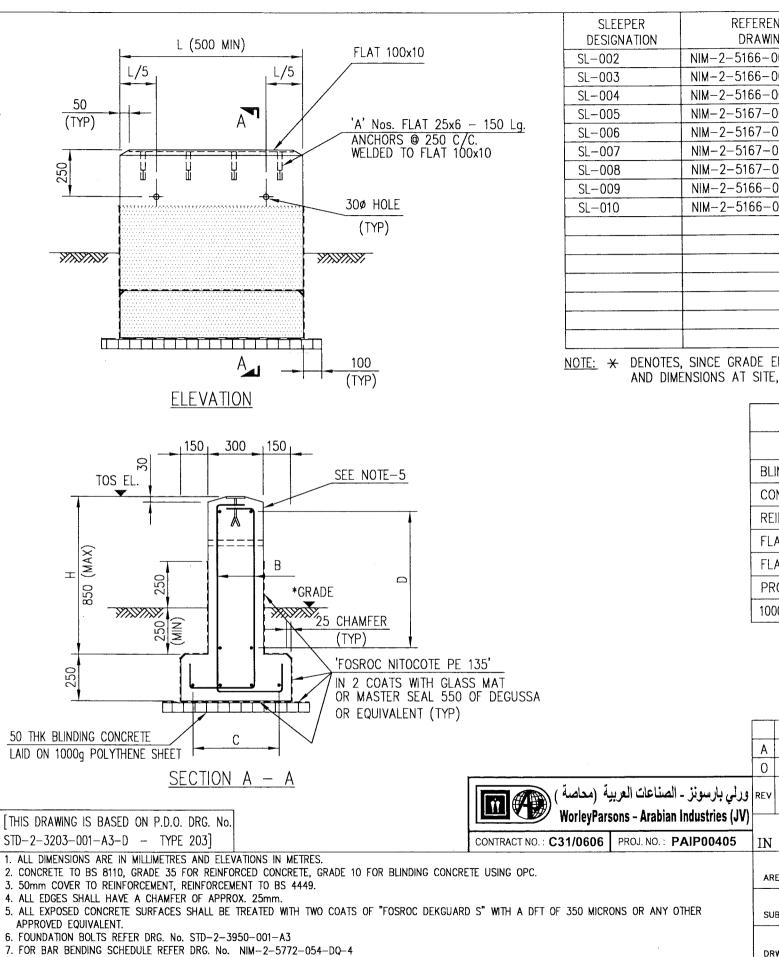
This schedule complies with BS 8666: 2005 All dimensions are in mm Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm







NOTES/REFERENCE DRAWINGS

SLEEPER	REFERENCE	NOS.	LENGTH	4 11	TOC EL		REINFORCEMENT			
DESIGNATION	DRAWING	REQD.	L	* H	TOS EL.	Α	В	С	D	
SL-002	NIM-2-5166-001-DQ-1	1	500	650	98.655	2	2x4-T10-1-150	4-T10-2-150	2x5-T10-3-150	
SL-003	NIM-2-5166-001-DQ-1	1	500	650	98.655	2	2x4-T10-1-150	4-T10-2-150	2x5-T10-3-150	
SL-004	NIM-2-5166-001-DQ-1	1	500	650	98.655	2	2x4-T10-1-150	4-T10-2-150	2x5-T10-3-150	
SL-005	NIM-2-5167-001-DQ-1	1	500	700	98.655	2	2x4-T10-4-150	4-T10-5-150	2x5-T10-6-150	
SL-006	NIM-2-5167-001-DQ-1	1	500	700	98.655	2	2x4-T10-4-150	4-T10-5-150	2x5-T10-6-150	
SL-007	NIM-2-5167-001-DQ-1	1	500	650	98.655	2	2x4-T10-1-150	4-T10-2-150	2x5-T10-3-150	
SL-008	NIM-2-5167-001-DQ-1	1	500	650	98.655	2	2x4-T10-1-150	4-T10-2-150	2x5-T10-3-150	
SL-009	NIM-2-5166-001-DQ-1	1	500	500	98.050	2	2x4-T10-7-150	4-T10-8-150	2x4-T10-9-150	
SL-010	NIM-2-5166-001-DQ-1	1	500	500	98.050	2	2x4-T10-7-150	4-T10-8-150	2x4-T10-9-150	

NOTE: \* DENOTES, SINCE GRADE ELEVATION VARIES, CONTRACTOR TO VERIFY ELEVATIONS AND DIMENSIONS AT SITE, PRIOR TO FABRICATION/CONSTRUCTION/INSTALLATION.

мто			
DESCRIPTION	QUANTITY	UNITS	SAP No.
BLINDING CONCRETE	0.25	m <sup>3</sup>	N.A.
CONCRETE GRADE 35	1.52	m <sup>3</sup>	N.A.
REINFORCEMENT STEEL	110.33	Kg	N.A.
FLAT 100x10	3.60	m	1000062581
FLAT 25x6	2.70	m	1000062571
PROTECTIVE COATING	18.75	m <sup>2</sup>	N.A.
1000g POLYTHENE SHEET	5.04	m <sup>2</sup>	N.A.

K. Munes

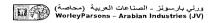
APPROVED FOR CONSTRUCTION

ן ח⊦	KEV	DATE	DRAWN BY	CHEC	CKED	DESCRIF HUN	WD3 No.	PDOA	PPROVAL
,	REV	DATE	DRAWN	TEAML.	J.ENG.	DESCRIPTION	WBS No.	PROJ. ENG.	SIGNATURE
	0	26.02.11	GCS	KBR	GSB	ISSUED FOR COMMENTS	IN.09.011	OSE/28N	
	Α	27.02.11	GCS	RR	<b>3</b> );	APPROVED FOR CONSTRUCTION	IN.09.011	OSE/28N	

PROJECT DRAWING REVISION

CONTRACT NO.: C31/0606 PROJ. NO.: PAIP00405 IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

AREA	: NIMR		SCALE 0	1:2	0	3 4	CAD	DR	AWI 6	NG 7
SUB AREA	PRODUCTION STATION	но. 05	N		تَمَان		مبة		•	
DRWG.TYPE	PIPE SUPPORTS-SLEEPER DETAIL	SS	DRWG	AREA CODE	Petro ENG SECT	SERIAL NUMBER		PROJ CODE	DWG	
DESCRIPTION	:SL-002 TO SL-010		NO	NIM	2	5772	053	DQ	3	Α
 ·							1 1:			



JOB NO.: PART ID.: PAIP00238

REF. DWG NO.: NIM-2-5772-053-DQ-3

PRODUCTION STATION

Document No.: NIM-2-5772-054-DQ-4

Revision No.: A Prepared by:

GCS

Checked by:

PNG Th

Date:

27.02.11

Total MTO for Rebars

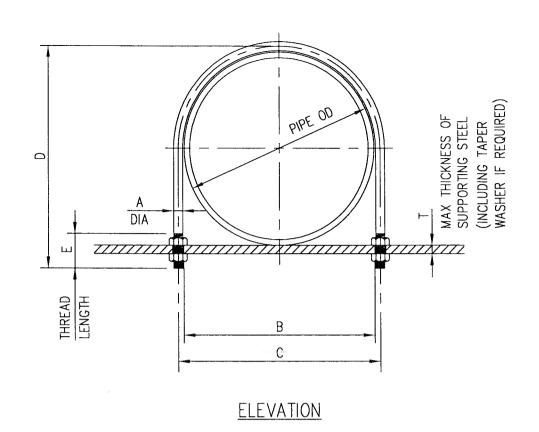
Dia. Of Bar	Т6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)			177.95					
Weight (Kgs)			110.33					
Total Weight (Kgs)								110.330

k. Muneus TA2

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D*	E/R*
SL-002 TO 004,	1	T10	5	8	40	1375	31	150	770	350	150	
007 & 008	2	T10	5	4	20	625	21	125	400	125		
	3	T10	5	10	50	675	21	150	400	150		
SL-004 & 005	4	T10	2	8	16	1425	31	150	820	350	150	4. 4.1
	5	T10	2	4	8	625	21	125	400	125		
	6	T10	2	10	20	675	21	150	400	150		
SL-009,010	7	T10	2	8	16	1225	31	150	620	350	150	
	8	T10_	2	4	8	625	21	125	400	125		
	9	T10	2	8	16	675	21	150	400	150		
								******				
										110.600.001		
												1 0000000000000000000000000000000000000
~~~~	<u> </u>	<u> </u>			<u>                                     </u>			J				

<sup>\*</sup> Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm



	MATERIAL GUIDE										
	BAR		NUTS								
SIZE	SAP No.	SIZE	SAP No.								
8	1000080335	M8	1000063795								
10	1000062586	M10	1000063796								
16	1000062588	M16	1000063798								
20	N.A.	M20	1000063799								
24	N.A.	M24	1000120055								

GNATION 0.5 0.75	1/2" 3/4"	MM 15	OD	Α	В	_	PIPE DIMENSIONS						
0.75		15			ט	С	D	E	T	REQD.			
	34."		21.3	8	32	40	45	30	10				
4	5/4	20	26.7	8	37	45	55	35	10	1			
. 1	1"	25	33.4	8	42	50	60	35	10	_			
1.5	11/2"	40	48.3	10	55	65	85	45	16	_			
-2	2"	50	60.3	10	70	80	100	45	16	3			
-3	3"	80	88.9	16	94	110	140	60	19	_			
- 4	4"	100	114.3	16	124	140	165	60	19	_			
-6	6"	150	168.3	20	175	195	225	70	19	_			
-8	8"	200	219.1	20	230	250	275	70	19	_			
-10	10"	250	273.0	20	285	305	335	75	22	-			
-12	12"	300	323.9	20	335	355	385	75	22	_			
-14	14"	350	355.6	24	366	390	425	80	22	_			
-16	16"	400	406.4	24	416	440	475	80	22	_			
-18	18"	450	457.0	24	471	495	525	80	22	_			
-20	20"	500	508.0	24	521	545	575	80	22	_			
-24	24"	600	610.0	24	621	645	675	80	22	_			
-28	28"	700	711.2	24	721	745	775	80	22	_			
- 30	30"	750	762.0	24	771	795	825	80	22	_			
	3 4 6 8 10 12 -14 -16 -18 -20 -24 -28	3 3" 4 4" 6 6" 8 8" -10 10" -12 12" -14 14" -16 16" -18 18" -20 20" -24 24" -28 28"	3     3"     80       4     4"     100       6     6"     150       8     8"     200       -10     10"     250       -12     12"     300       -14     14"     350       -16     16"     400       -18     18"     450       -20     20"     500       -24     24"     600       -28     28"     700	3       3"       80       88.9         4       4"       100       114.3         6       6"       150       168.3         8       8"       200       219.1         10       10"       250       273.0         -12       12"       300       323.9         -14       14"       350       355.6         -16       16"       400       406.4         -18       18"       450       457.0         -20       20"       500       508.0         -24       24"       600       610.0         -28       28"       700       711.2	3       3"       80       88.9       16         4       4"       100       114.3       16         6       6"       150       168.3       20         8       8"       200       219.1       20         10       10"       250       273.0       20         12"       300       323.9       20         14       14"       350       355.6       24         16       16"       400       406.4       24         18       18"       450       457.0       24         20       20"       500       508.0       24         24       24"       600       610.0       24         28"       700       711.2       24	3       3"       80       88.9       16       94         4       4"       100       114.3       16       124         6       6"       150       168.3       20       175         8       8"       200       219.1       20       230         -10       10"       250       273.0       20       285         -12       12"       300       323.9       20       335         -14       14"       350       355.6       24       366         -16       16"       400       406.4       24       416         -18       18"       450       457.0       24       471         -20       20"       500       508.0       24       521         -24       24"       600       610.0       24       621         -28       28"       700       711.2       24       721	3       3"       80       88.9       16       94       110         4       4"       100       114.3       16       124       140         6       6"       150       168.3       20       175       195         8       8"       200       219.1       20       230       250         10       10"       250       273.0       20       285       305         12       12"       300       323.9       20       335       355         14       14"       350       355.6       24       366       390         16       16"       400       406.4       24       416       440         18       18"       450       457.0       24       471       495         20       20"       500       508.0       24       521       545         24       24"       600       610.0       24       621       645         -28       28"       700       711.2       24       721       745	3       3"       80       88.9       16       94       110       140         4       4"       100       114.3       16       124       140       165         6       6"       150       168.3       20       175       195       225         8       8"       200       219.1       20       230       250       275         10       10"       250       273.0       20       285       305       335         12       12"       300       323.9       20       335       355       385         14       14"       350       355.6       24       366       390       425         16       16"       400       406.4       24       416       440       475         18       18"       450       457.0       24       471       495       525         -20       20"       500       508.0       24       521       545       575         -24       24"       600       610.0       24       621       645       675         -28       28"       700       711.2       24       721       745       775	3       3"       80       88.9       16       94       110       140       60         4       4"       100       114.3       16       124       140       165       60         6       6"       150       168.3       20       175       195       225       70         8       8"       200       219.1       20       230       250       275       70         10       10"       250       273.0       20       285       305       335       75         12       12"       300       323.9       20       335       355       385       75         14       14"       350       355.6       24       366       390       425       80         16       16"       400       406.4       24       416       440       475       80         18       18"       450       457.0       24       471       495       525       80         20       20"       500       508.0       24       521       545       575       80         -24       24"       600       610.0       24       621       645       67	3       3"       80       88.9       16       94       110       140       60       19         4       4"       100       114.3       16       124       140       165       60       19         6       6"       150       168.3       20       175       195       225       70       19         8       8"       200       219.1       20       230       250       275       70       19         10       10"       250       273.0       20       285       305       335       75       22         12"       300       323.9       20       335       355       385       75       22         14       14"       350       355.6       24       366       390       425       80       22         16       16"       400       406.4       24       416       440       475       80       22         18       18"       450       457.0       24       471       495       525       80       22         24       24"       600       610.0       24       621       645       675       80       22			

10. Muneus TA2

## APPROVED FOR CONSTRUCTION

OSE/28N APPROVED FOR CONSTRUCTION IN.09.011 A 27.02.11 RR IN.09.011 OSE/28N 0 26.02.11 GCS KBR GSB ISSUED FOR COMMENTS PROJ. ENG. SIGNATURE TEAML J.ENG. | REV ورلى بارسونز - الصناعات العربية (محاصة DRAWN BY DESCRIPTION P D O APPROVAL WorleyParsons - Arabian Industries (JV) PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER CAD DRAWING

[THIS DRAWING IS BASED ON P.D.O. DRG. No. STD-2-3818-001-A3-C - TYPE 818]

- 1. ALL DIMENSIONS ARE IN MILLIMETRES.
- 2. EACH BOLT TO BE SUPPLIED WITH 2 NUTS & 2 LOCKNUTS.
- 3. MATERIAL-BOLTS TO BS EN 10025 GR S275 JR NUTS TO ISO 898/11 GR 8
- 4.U-BOLT CORROSION PROTECTION SHALL COMPLY WITH SP-1246-2

DRAWING NUMBER REFERENCE DRAWINGS NOTES

DESCRIPTION

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

SERIAL

SH.

:NIMR AREA

PRODUCTION STATION NO. 05

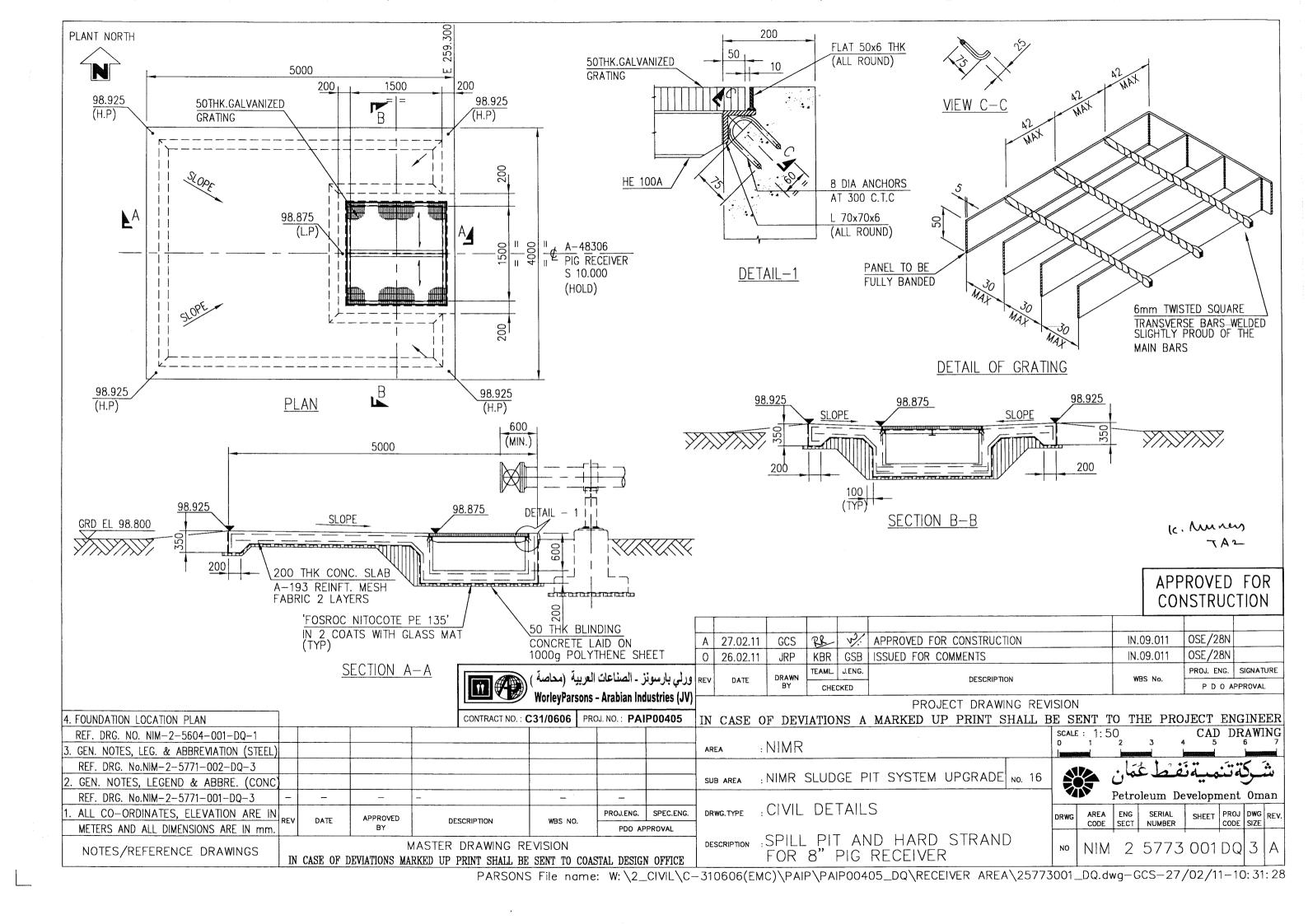
.PIPE SUPPORTS

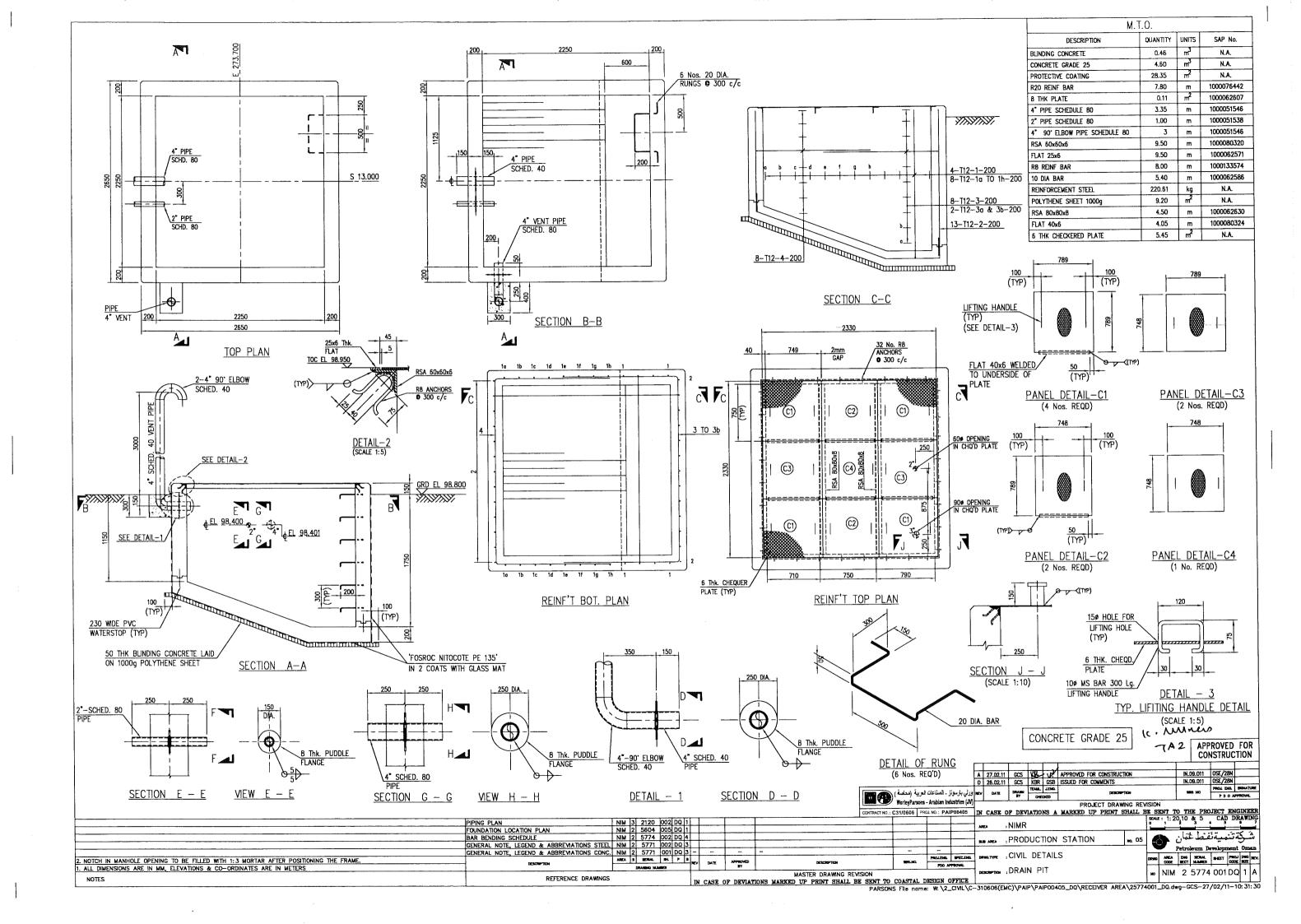
DESCRIPTION : 'U' BOLT (PIPE NOT GRIPPED) DETAILS

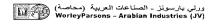
Petroleum Development Oman AREA ENG SERIAL CODE SECT NUMBER

NIM 2 5772 055 DQ 3 A

PARSONS File name: W:\2\_CIVIL\C-310606(EMC)\PAIP\PAIP00405\_DQ\RECEIVER AREA\MECHANICAL REQUIREMENTS\25772055\_DQ.dwg-GCS-27/02/11-10:34:10







JOB NO.: PART ID.: PAIP00405

PRODUCTION STATION

**DRAIN PIT** 

Document No.: NIM-2-5774-002-DQ-4

Revision No.: A Prepared by:

GCS

Checked by:

PNG 21

REF. DWG NO.: NIM-2-5774-001-DQ-3

Date:

27.02.11

Total MTO for Rebars.

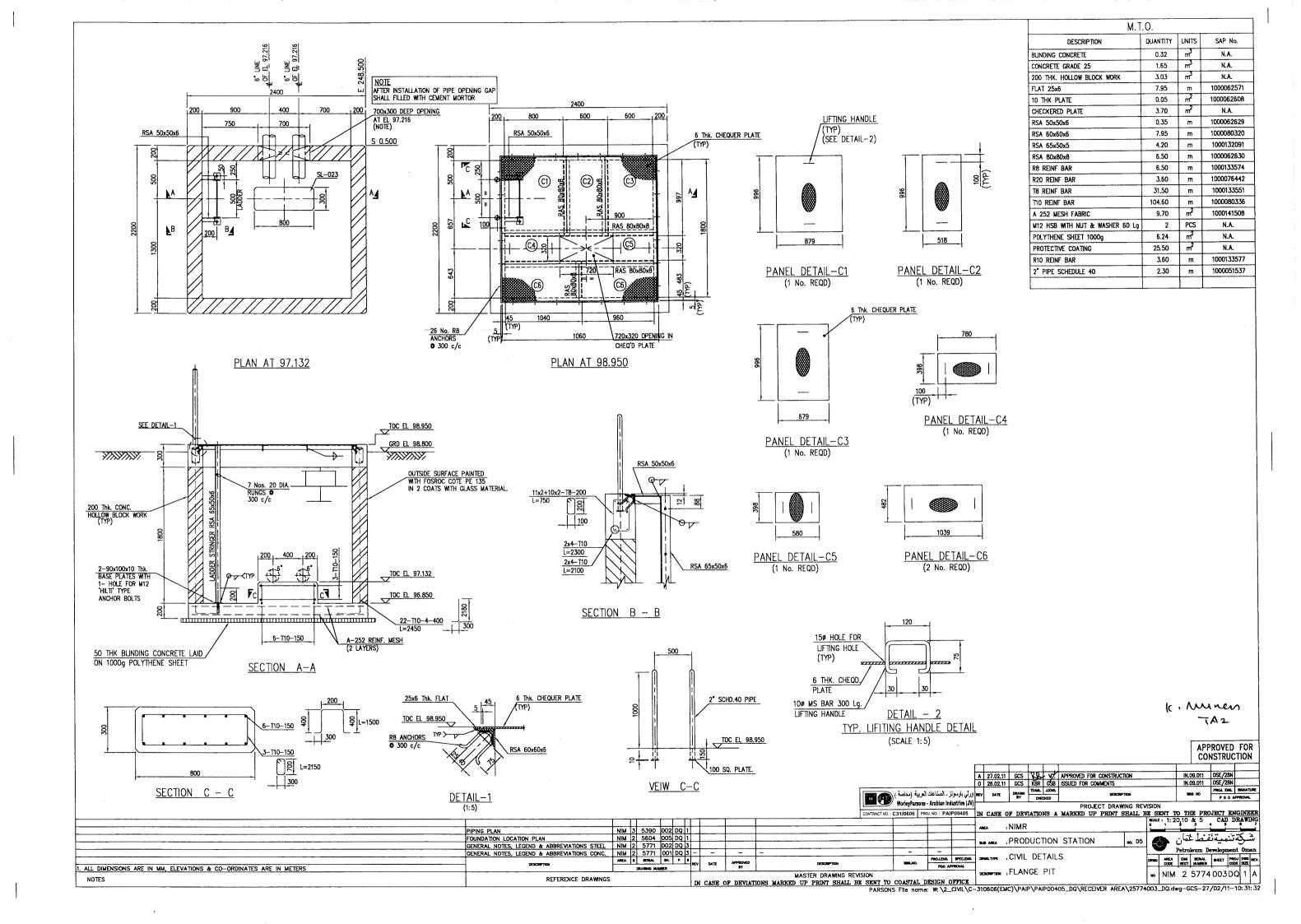
Dia. Of Bar	Т6	Т8	T10	T12	T16	T20	T25	T32
Length of Bar (m)				247.88				
Weight (Kgs)				220.61				
Total Weight (Kgs	)							220.610

1. Miners -(A2

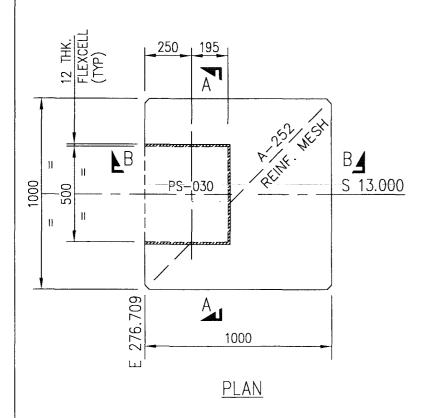
1a   T12   1   1   1   5200   21   1390   2450   1390   150   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1500   1	Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D.	E/R*
1b     T12     1     1     1     5350     21     1470     2450     1470       1c     T12     1     1     1     5500     21     1545     2450     1545       1d     T12     1     1     1     5675     21     1625     2450     1625       1e     T12     1     1     1     5825     21     1700     2450     1700       1f     T12     1     1     1     5975     21     1775     2450     1775       1g     T12     1     1     1     6125     21     1850     2450     1850       1h     T12     1     1     1     6275     21     1925     2450     1925       2     T12     1     13     13     5850     99f     1330     1955     630     635     196       3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     6800     41     300     1920     2450     1920     30       3b     T12     1     1     1     6800     41     300     1920     2450<	DRAIN PIT	1	T12	1	4	4	6400	21	1990	2450	1990	inon	100
1c         T12         1         1         1         5500         21         1545         2450         1545           1d         T12         1         1         1         5675         21         1625         2450         1625           1e         T12         1         1         1         5825         21         1700         2450         1700           1f         T12         1         1         1         5975         21         1775         2450         1775           1g         T12         1         1         1         6125         21         1850         2450         1850           1h         T12         1         1         1         6275         21         1925         2450         1925           2         T12         1         13         13         5850         99f         1330         1955         630         635         196           3         T12         1         8         8         5500         21         1540         2450         1540           3a         T12         1         1         1         5500         41         300         1270 <t< td=""><td></td><td>la</td><td>T12</td><td>1</td><td>1</td><td>1</td><td>5200</td><td>21</td><td>1390</td><td>2450</td><td>1390</td><td></td><td></td></t<>		la	T12	1	1	1	5200	21	1390	2450	1390		
1d     T12     1     1     1     5675     21     1625     2450     1625       1e     T12     1     1     1     5825     21     1700     2450     1700       1f     T12     1     1     1     5975     21     1775     2450     1775       1g     T12     1     1     6125     21     1850     2450     1850       1h     T12     1     1     1     6275     21     1925     2450     1925       2     T12     1     13     13     5850     99f     1330     1955     630     635     196       3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     6800     41     300     1920     2450     1920     30       3b     T12     1     1     1     6800     41     300     1920     2450     1920     30		1b	T12	1	1	1	5350	21	1470	2450	1470		
1e     T12     1     1     1     5825     21     1700     2450     1700       1f     T12     1     1     1     5975     21     1775     2450     1775       1g     T12     1     1     1     6125     21     1850     2450     1850       1h     T12     1     1     1     6275     21     1925     2450     1925       2     T12     1     13     13     5850     99f     1330     1955     630     635     196       3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     5500     41     300     1270     2450     1270     300       3b     T12     1     1     1     6800     41     300     1920     2450     1920     300		1c	T12	1	I	1	5500	21	1545	2450	1545		
1f     T12     1     1     1     5975     21     1775     2450     1775       1g     T12     1     1     1     6125     21     1850     2450     1850       1h     T12     1     1     1     6275     21     1925     2450     1925       2     T12     1     13     13     5850     99f     1330     1955     630     635     196       3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     5500     41     300     1270     2450     1270     300       3b     T12     1     1     1     6800     41     300     1920     2450     1920     300		1d	T12	1	1	1	5675	21	1625	2450	1625		
1g     T12     1     1     6125     21     1850     2450     1850       1h     T12     1     1     1     6275     21     1925     2450     1925       2     T12     1     13     13     5850     99f     1330     1955     630     635     196       3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     5500     41     300     1270     2450     1270     300       3b     T12     1     1     1     6800     41     300     1920     2450     1920     300		1e	T12	1	1	1	5825	21	1700	2450	1700		
1h         T12         1         1         6275         21         1925         2450         1925           2         T12         1         13         13         5850         99f         1330         1955         630         635         196           3         T12         1         8         8         5500         21         1540         2450         1540           3a         T12         1         1         1         5500         41         300         1270         2450         1270         300           3b         T12         1         1         1         6800         41         300         1920         2450         1920         300		lf	T12	1	1	1	5975	21	1775	2450	1775		
2     T12     1     13     13     5850     99f     1330     1955     630     635     196       3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     5500     41     300     1270     2450     1270     300       3b     T12     1     1     1     6800     41     300     1920     2450     1920     300		1g	T12	1	1	1	6125	_21	1850	2450	1850		
3     T12     1     8     8     5500     21     1540     2450     1540       3a     T12     1     1     1     5500     41     300     1270     2450     1270     300       3b     T12     1     1     1     6800     41     300     1920     2450     1920     300		1h	T12	1	1	1	6275	21	1925	2450	1925		
3a     T12     1     1     1     5500     41     300     1270     2450     1270     300       3b     T12     1     1     1     6800     41     300     1920     2450     1920     300		2	T12	1	13	13	5850	99f	1330	1955	630	635	1960
3b T12 1 1 1 6800 41 300 1920 2450 1920 300		3	T12	1	8	8	5500	21	1540	2450	1540		
		3a	T12	1	1	1	5500	41	300	1270	2450	1270	300
4 T12 1 8 8 5500 21 1540 2450 1540		3b	T12	1	1	1	6800	41	300	1920	2450	1920	300
		4	T12	1	8	8	5500	21	1540	2450	1540		
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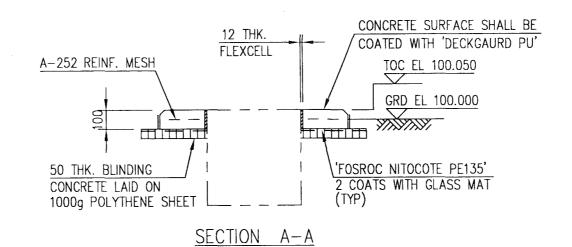
Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

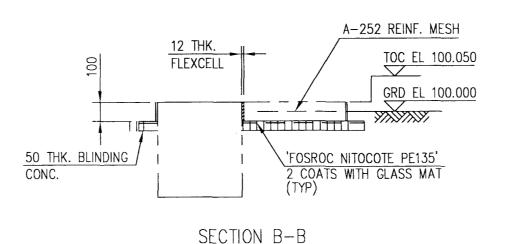
<sup>†</sup> Specified in multiples of 25 mm









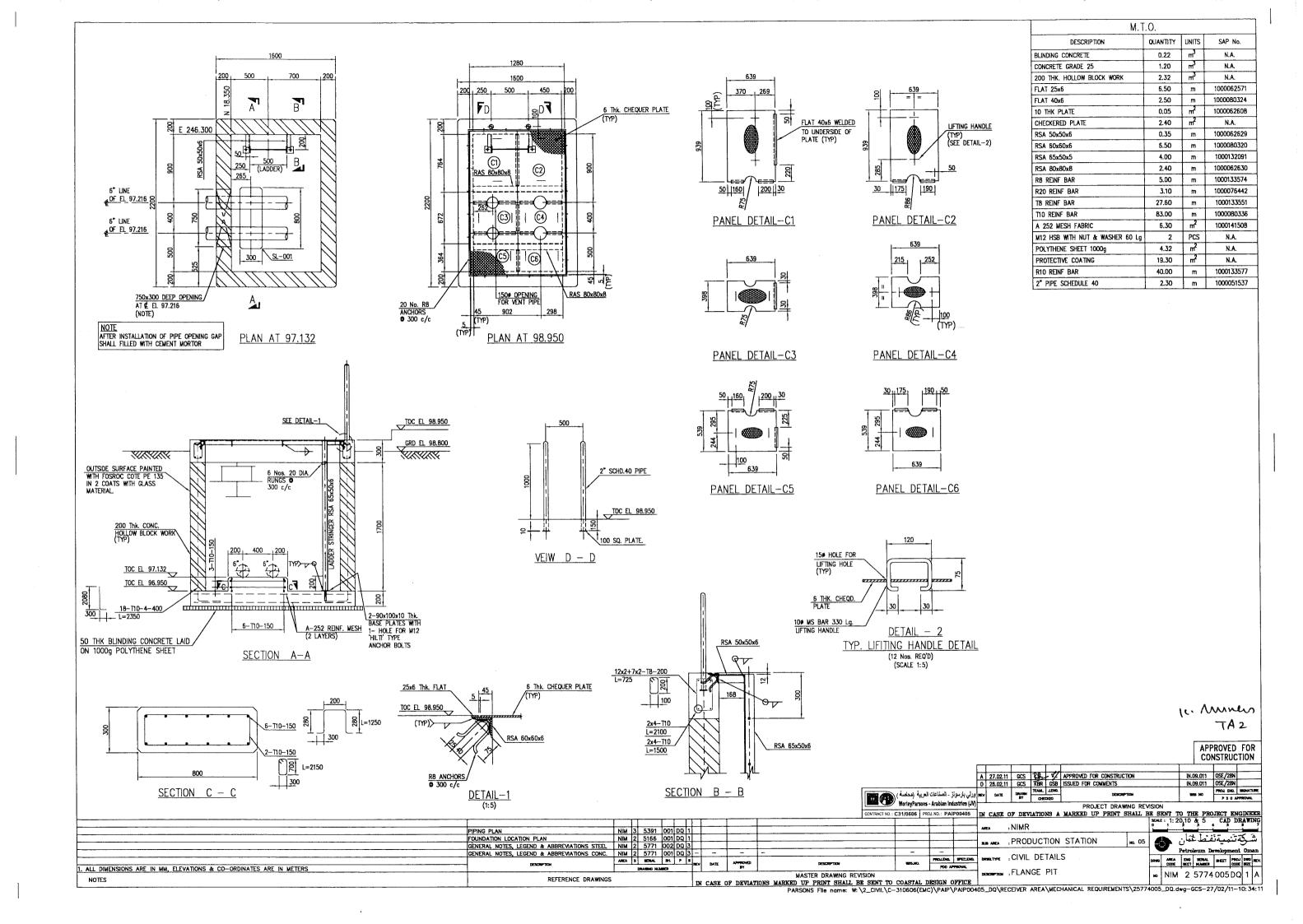


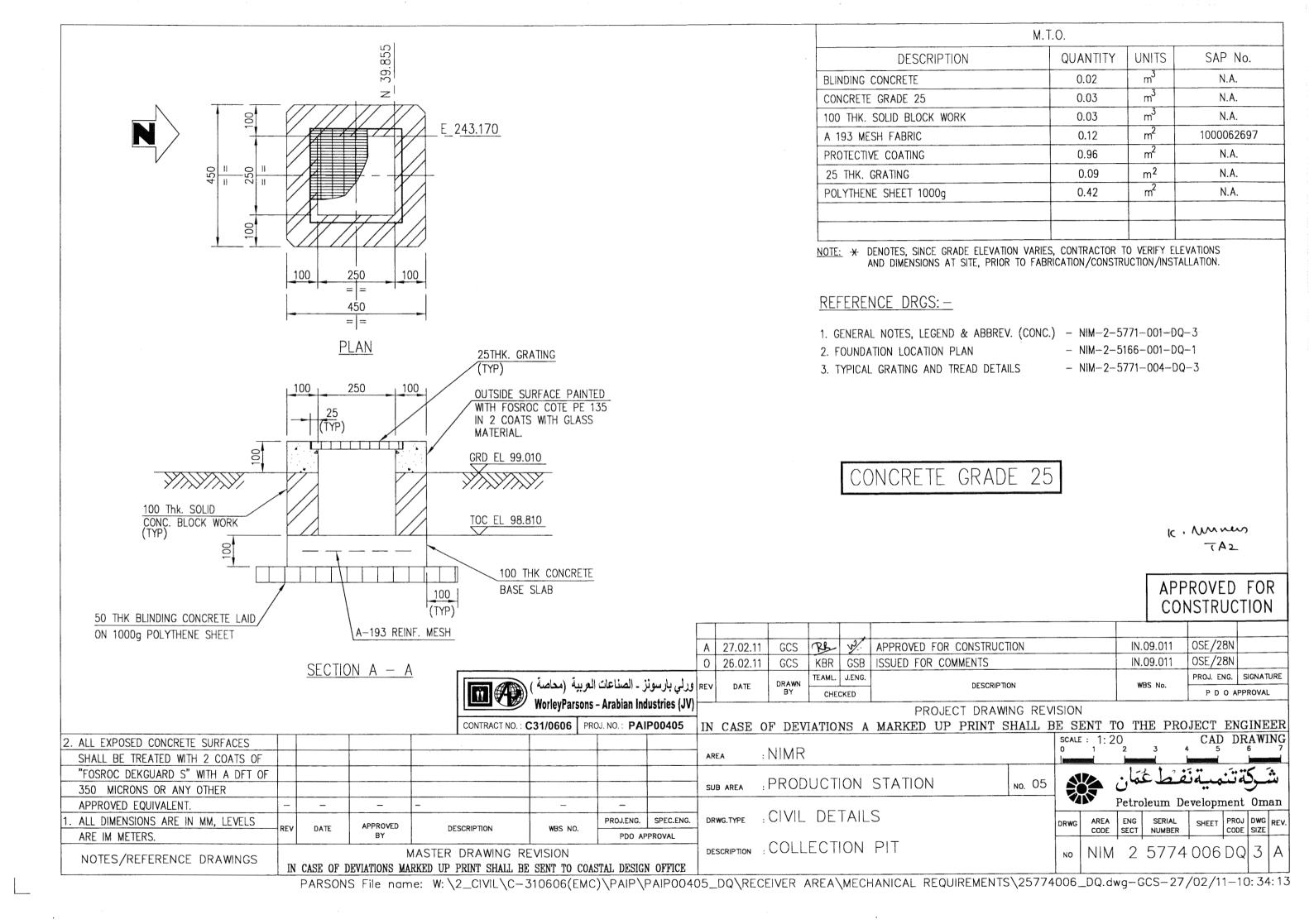
M.T.O. QUANTITY UNITS DESCRIPTION  $m^3$ BLINDING CONCRETE 0.06  $m^3$ CONCRETE GRADE 25 0.08 m<sup>2</sup> PROTECTION COATING 1.60 12 THK. FLEXCELL 0.15 m m<sup>2</sup> 0.60 A-252 REINFT. MESH m<sup>2</sup> 1000g POLYTHENE SHEET 1.22

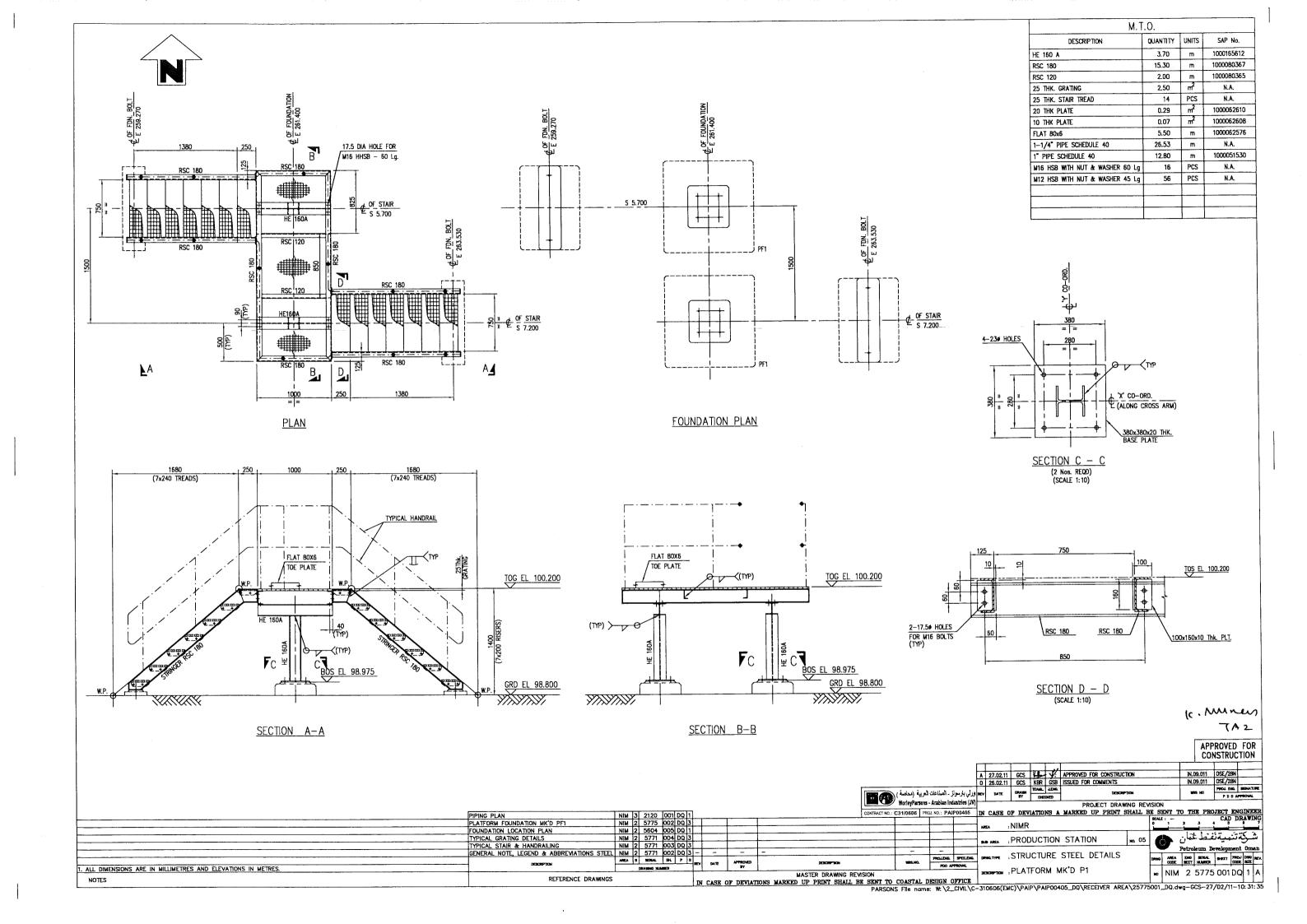
> 1. Muneus TA2

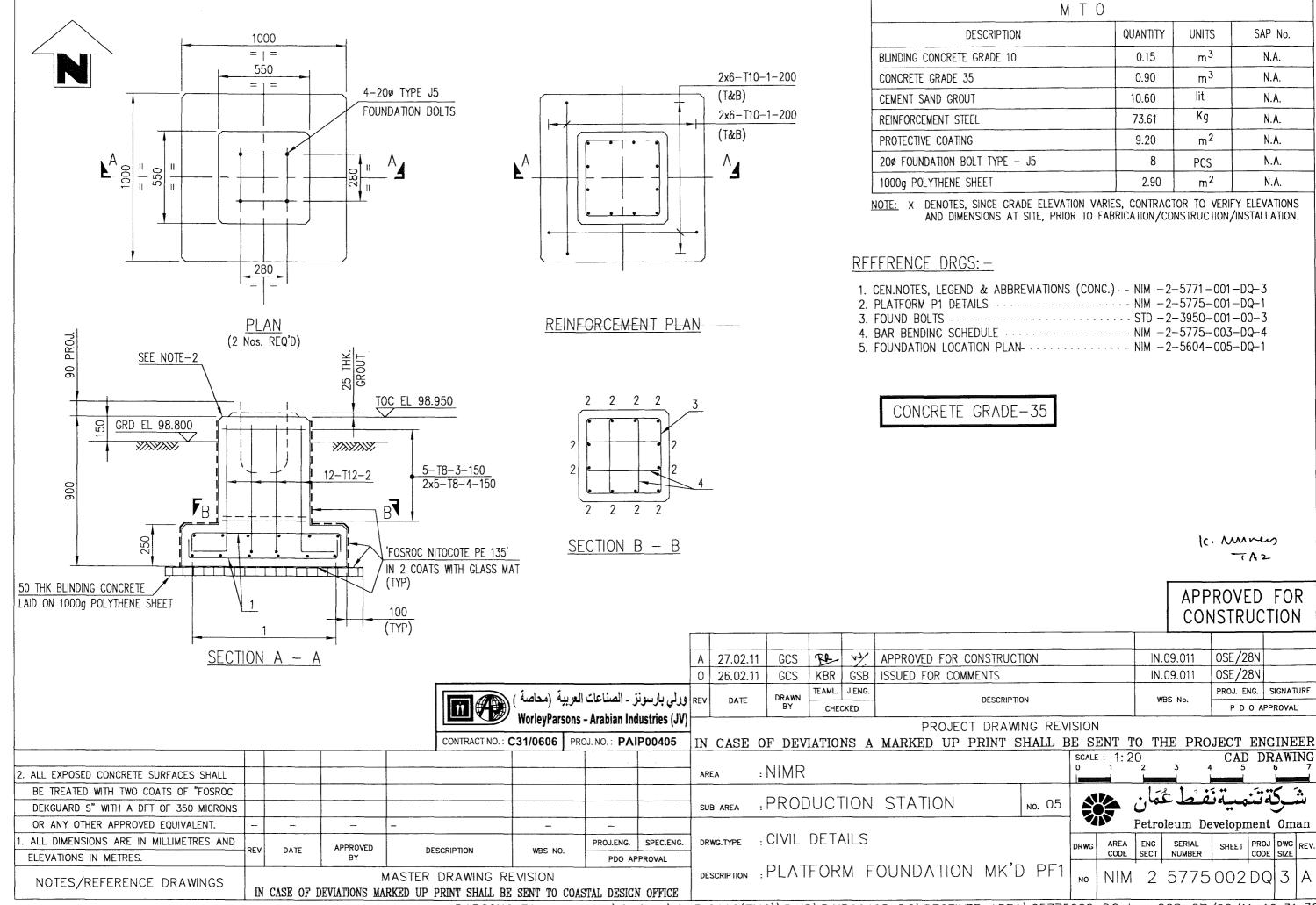
# APPROVED FOR CONSTRUCTION

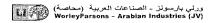
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·																	
							Α	27.02.11	GCS	RB	12	APPROVED FOR CONSTRUCTION			IN.09.01	OSE/28	N
							0	28.12.10	JRP			ISSUED FOR COMMENTS			IN.09.011	OSE/28N	
				رة (مراء) م	- الصناعات العرب	tionals to	A DEV	DATE	DRAWN	TEAML.	J.ENG.	DESCRIPTION			WBS No	PROJ. ENG.	SIGNATURE
						-	· I	DAIL	BY	CHE	CKED	DESCRIPTION			MP2 NO	PDO	APPROVAL
				WorleyPars	ons - Arabian I	ingustries (JV						PROJECT DRAWING RE	VISIO	N			
			CONTRACT N	O.: C31/0606	PROJ. NO.: P	AIP00405	IN	CASE 0	F DEV	OITAI	NS A	MARKED UP PRINT SHALL	BE S	ENT T	O THE P	ROJECT 1	ENGINEER
				-									SCAL	E: 1:2	20	CAD	DRAWING
							ARI	EA :	NIMR								
											0F D	IT CYCTEN LIDODADE 10	.   🗚	( <b>1</b> ).	ا عُمَا ٠	نميةنف	TZ . Z
2. FOUNDATION LOCATION PLAN REF. DRG. No;	,						SUI	B AREA :	NIMK :	SLUD	GE P	IT SYSTEM UPGRADE NO. 16				**	
NIM-2-5604-001-DQ-1 -			_	_					011/11	ρг.	T- A 11				Petroleum	Developm	ent Oman
1. GEN. NOTES, LEGEND AND ABBREVIATIONS (CONC.)	DATE	APPROVED	DESCRIPTION	B.I.NO.	PROJ.ENG.	SPEC.ENG.	DR	WG.TYPE :	CIVIL	DE	IAIL		DRWG		ENG SERIA	AL SHEET	PROJ DWG REV
REF. DRG. No: NIM-2-5771-001-DQ-3		BY	BESCHI HON	B.I.IVO.	PDO Al	PPROVAL			<b>.</b>	· •	- ^ ^ 1 -			CODE	SECT NUMB	ER	CODE SIZE
NOTES/REFERENCE DRAWINGS		M	MASTER DRAWING	REVISION			DE	SCRIPTION :	HAKL	) 51	ANL	)	NO	NIM	2 57	74 004 [	OQ 3 A
IN CASE OF DEVIATIONS MARKED U	JP PRIN	T SHALL I															
			PARS(	ONS File nar	me: W:\2	_CIVIL\C	-310	0606(EM0	C)\PAIF	PAI	P004	05_DQ\RECEIVER AREA\2577	74004	_DQ.d	wg-GCS-	27/02/11	−10: 31: 33











JOB NO.:

PAIP00238

PRODUCTION STATION

Document No.: NIM-2-5775-003-DQ-4

PART ID.:

PLATFORM-P1

Revision No.: Prepared by:

GCS

Checked by:

PNG R

REF. DWG NO.: NIM-2-5775-002-DQ-3

Date:

27.02.11

Total MTO for Rebars.

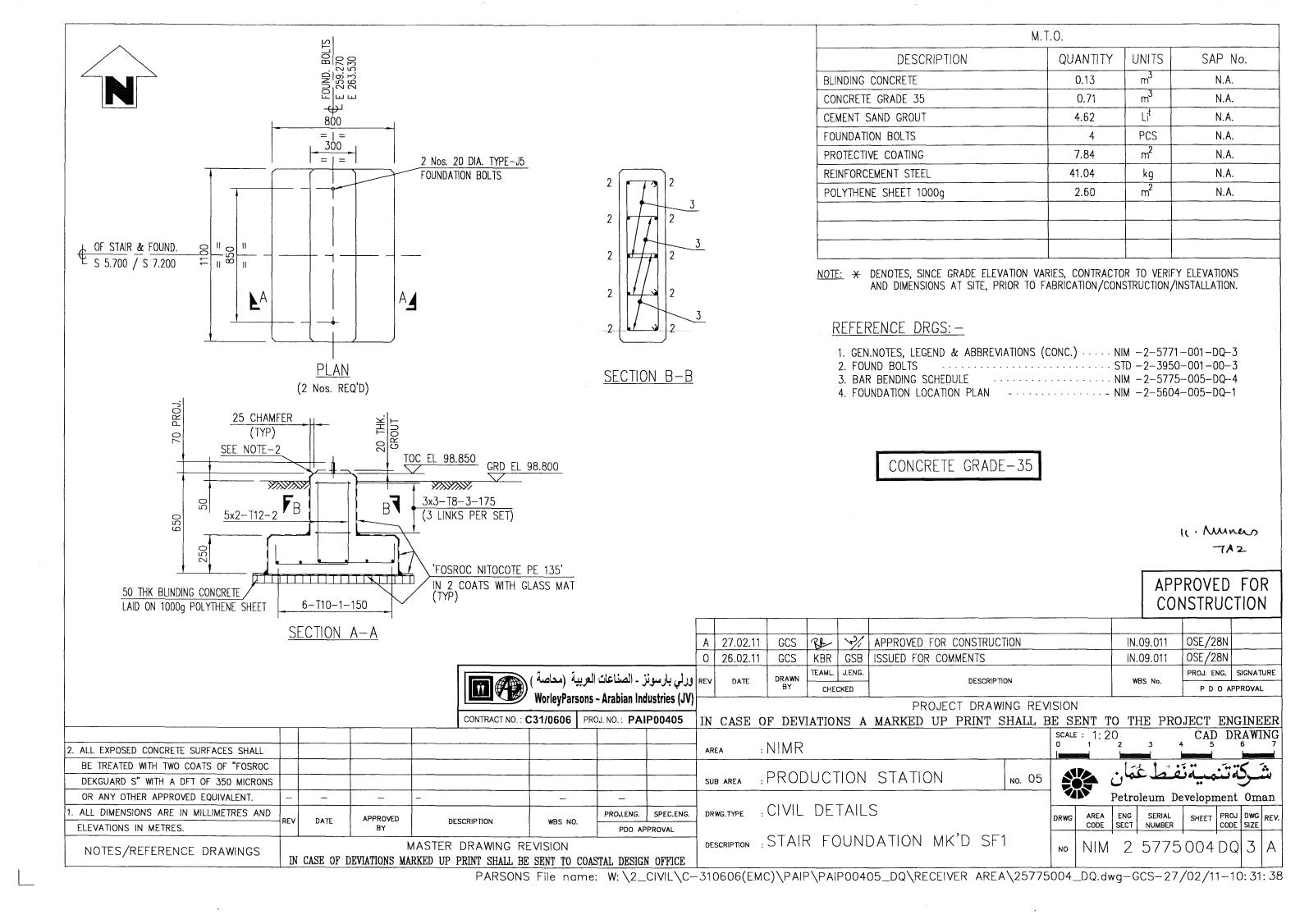
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		48.25	54.00	23,40				
Weight (Kgs)		19.30	33.48	20,83				
Total Weight (Kgs	)							73.610

Designation	Bar Mark	Type & Size	Nos. Regđ	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B⁺	C,	D,	E/R*
PLATFORM-P1	1	T10	2	24	48	1125	21	125	900	125		
	2	T12	2	12	24	975	11	200	780			\$ A
	3	T8	2	5	10	1975	51	450	450			
	4	Т8	2	10	20	1425	51	450	175_			
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This schedule complies with BS 8666: 2005 All dimensions are in mm

Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

<sup>†</sup> Specified in multiples of 25 mm





JOB NO.:

PAIP00238

REF. DWG NO.: NIM-2-5775-004-DQ-3

PART ID.:

PRODUCTION STATION

STAIR FOUNDATION

Document No.: NIM-2-5775-005-DQ-4

Revision No.:

Prepared by: Checked by:

GCS PNG PL

Date:

27.02.1

Total MTO for Rebars

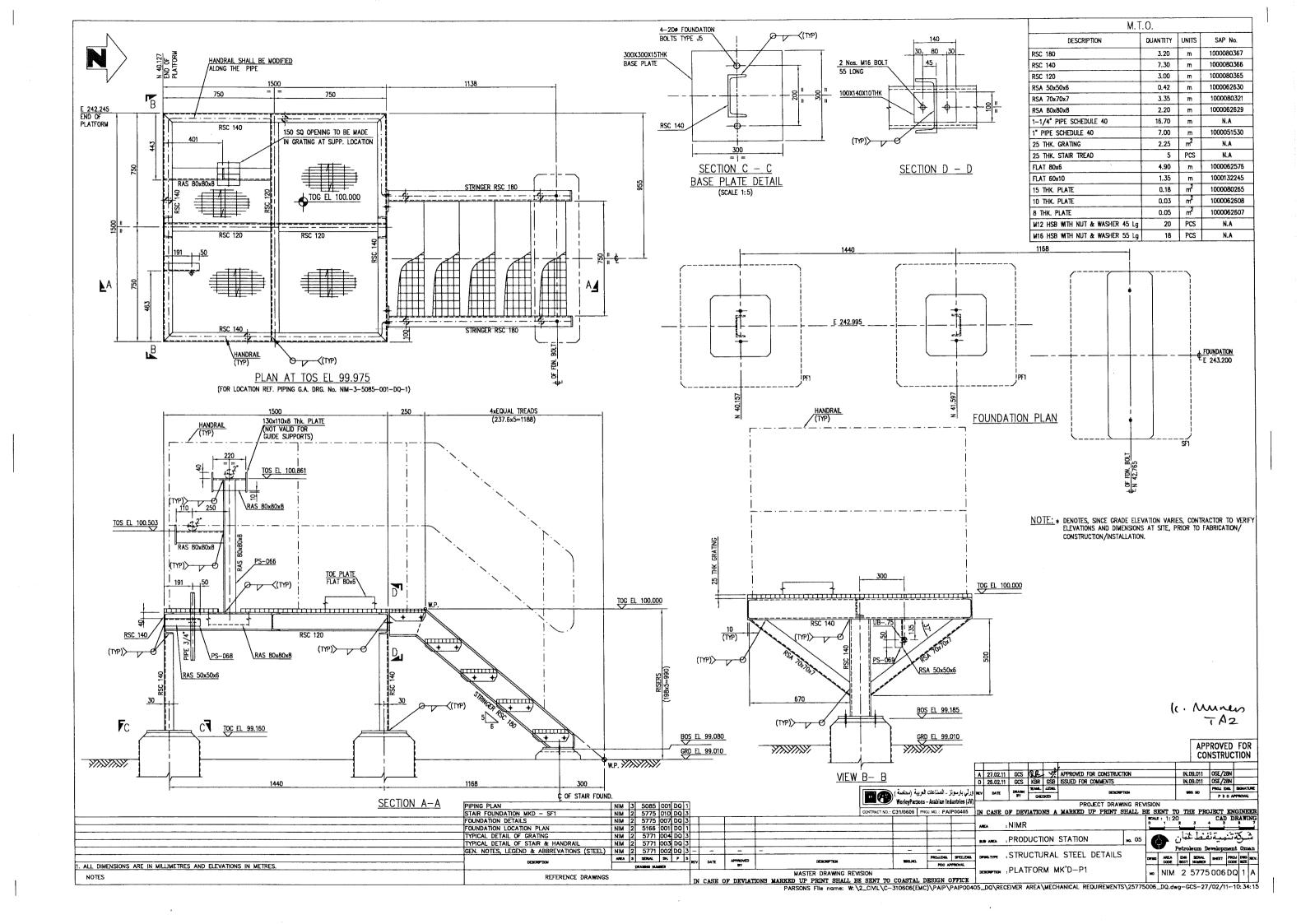
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		28.80	15.30	22.50				
Weight (Kgs)		11.52	9.49	20.03				
Total Weight (Kgs)	)				· · · · · · · · · · · · · · · · · · ·			41.040

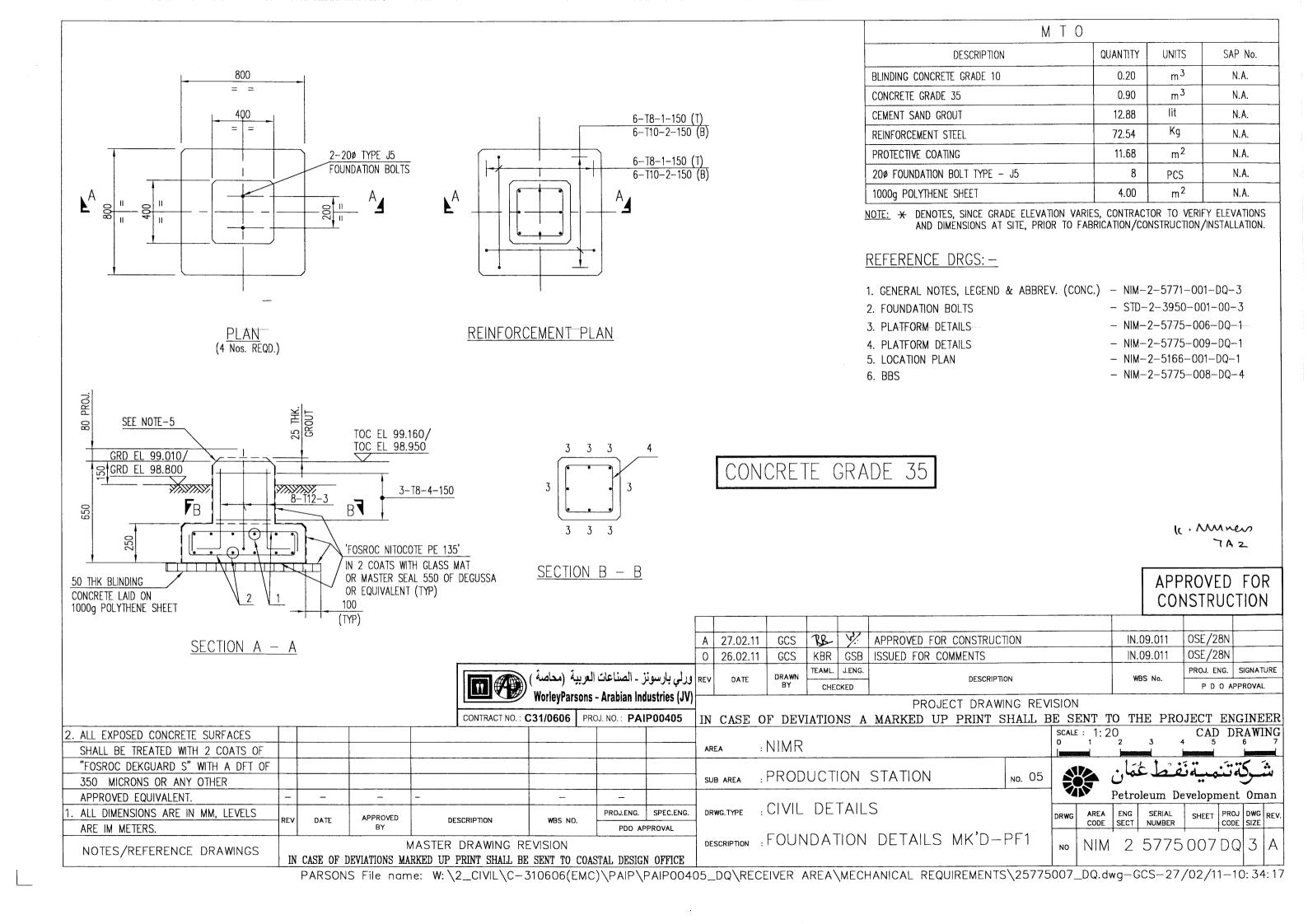
Designation	Bar Mark	Type & Size	Nos. Regd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	$\mathbf{A}^{\star}$	B*	C*	D.	E/R*
STAIR	1	T10	2	6	12	1275	21	150	1000	150		
FOUNDATION	2	T12	2	10	20	1125	21	150	450	550		
	3	Т8	2	9	18	1600	51	520	200			
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PT-00-07-17-17-17-17-17-17-17-17-17-17-17-17-17												
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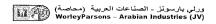
All dimensions are in mm

Refer to Bar shape Code drawing

<sup>\*</sup> Specified in multiples of 5 mm † Specified in multiples of 25 mm







JOB NO.:

PA1P00238

PART ID.:

NIMR SLUDGE PIT SYSTEMS

PLATFORM-P3 & P4

Document No.: NIM-2-5775-008-DQ-4

Revision No.:

Prepared by: Checked by:

GCS PNG P

Date:

27.02.11

REF. DWG NO.: NIM-2-5775-007-DQ-3

Total MTO for Rebars.

Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		60.90	44.40	23.20				
Weight (Kgs)		24.36	27.53	20.65				
Total Weight (Kgs	)							72.540

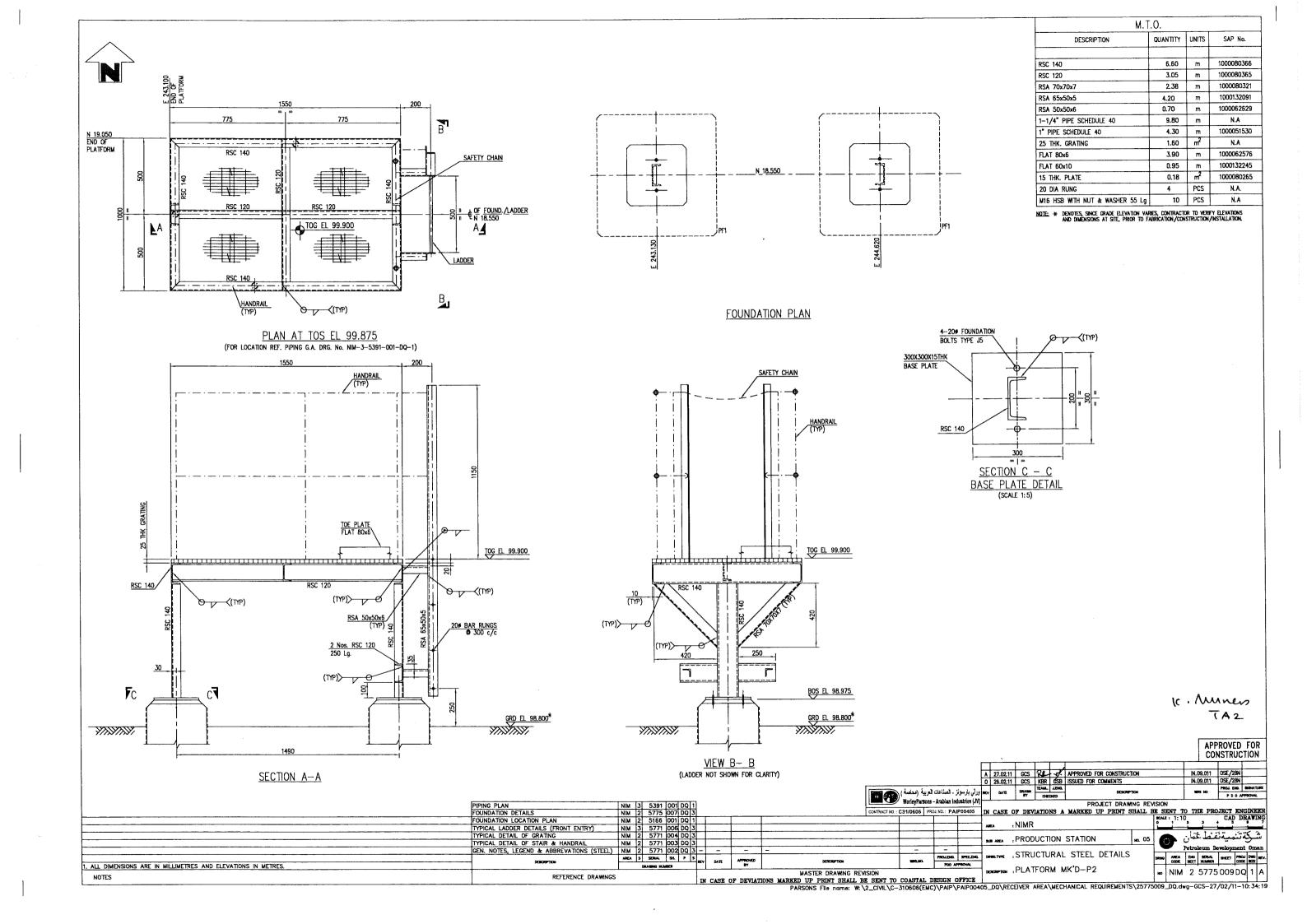
Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B	C,	D.	E/R
PLATFORM	1	Т8	4	12	48	925	21	125	700	125		
FDN. PF2	2	T10	4	12	48	925	21	125	700	125		
	3	T12	4	8	32	725	11	200	530			
	4	Т8	4	3	12	1375	51	300	300			
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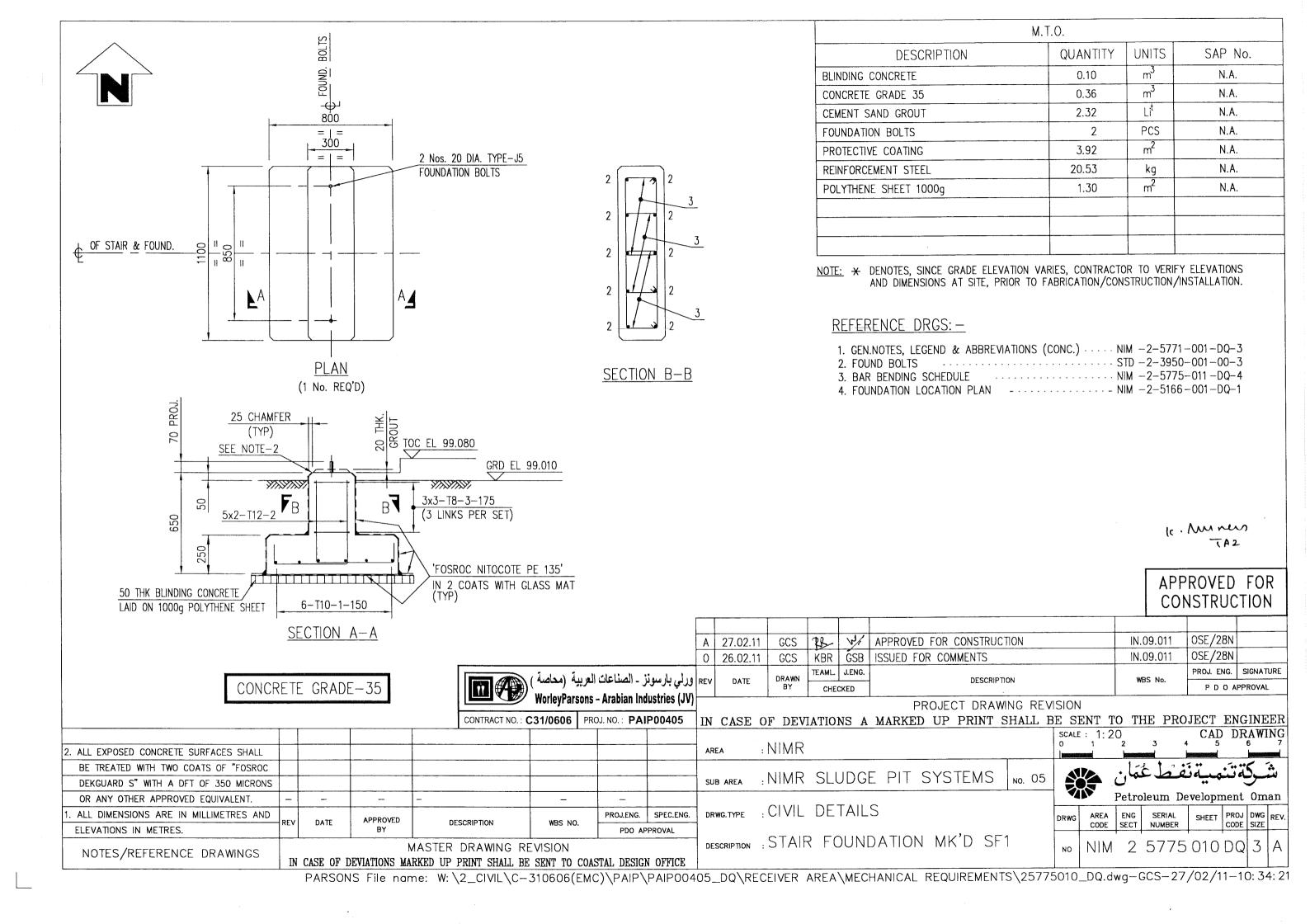
This schedule complies with BS 8666: 2005

All dimensions are in mm

Refer to Bar shape Code drawing \* Specified in multiples of 5 mm

† Specified in multiples of 25 mm







JOB NO.: PART ID.: PAIP00238

REF. DWG NO.: NIM-2-5775-010-DQ-3

NIMR SLUDGE PIT SYSTEMS

STAIR FOUNDATION

Document No.: NIM-2-5775-011-DQ-4

Revision No.: A

GCS

Prepared by: Checked by:

PNG

Date:

27.02.11

Total MTO for Rebars.

10ta 11110 101 100	JUL 01							
Dia. Of Bar	T6	T8	T10	T12	T16	T20	T25	T32
Length of Bar (m)		14.40	7.65	11.25				
Weight (Kgs)		5.76	4.75	10.02				
Total Weight (Kgs)	)							20,530

K. Muneus TA2

Designation	Bar Mark	Type & Size	Nos. Reqd	No. of Bars in each	Total Nos.	Length of each Bar	Shape code	A*	B*	C,	D,	E/R*
STAIR	1	T10	1	6	6	1275	21	150	1000	150		
FOUNDATION	2	T12	1	10	10	1125	21	150	450	550		
MK'D SF1	3	Т8	1	9	9	1600	51	520	200			

This schedule complies with BS 8666: 2005

All dimensions are in mm

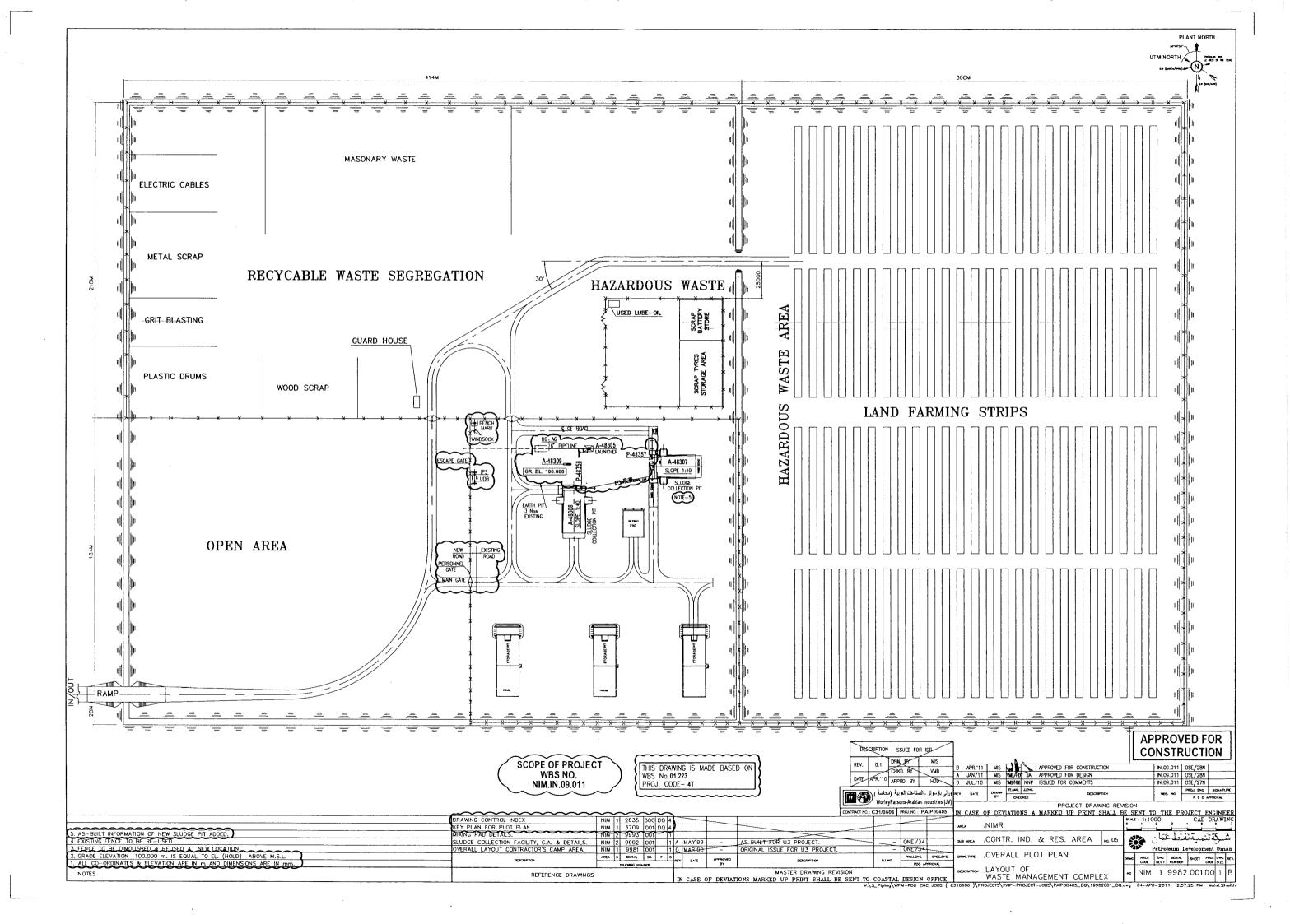
Refer to Bar shape Code drawing

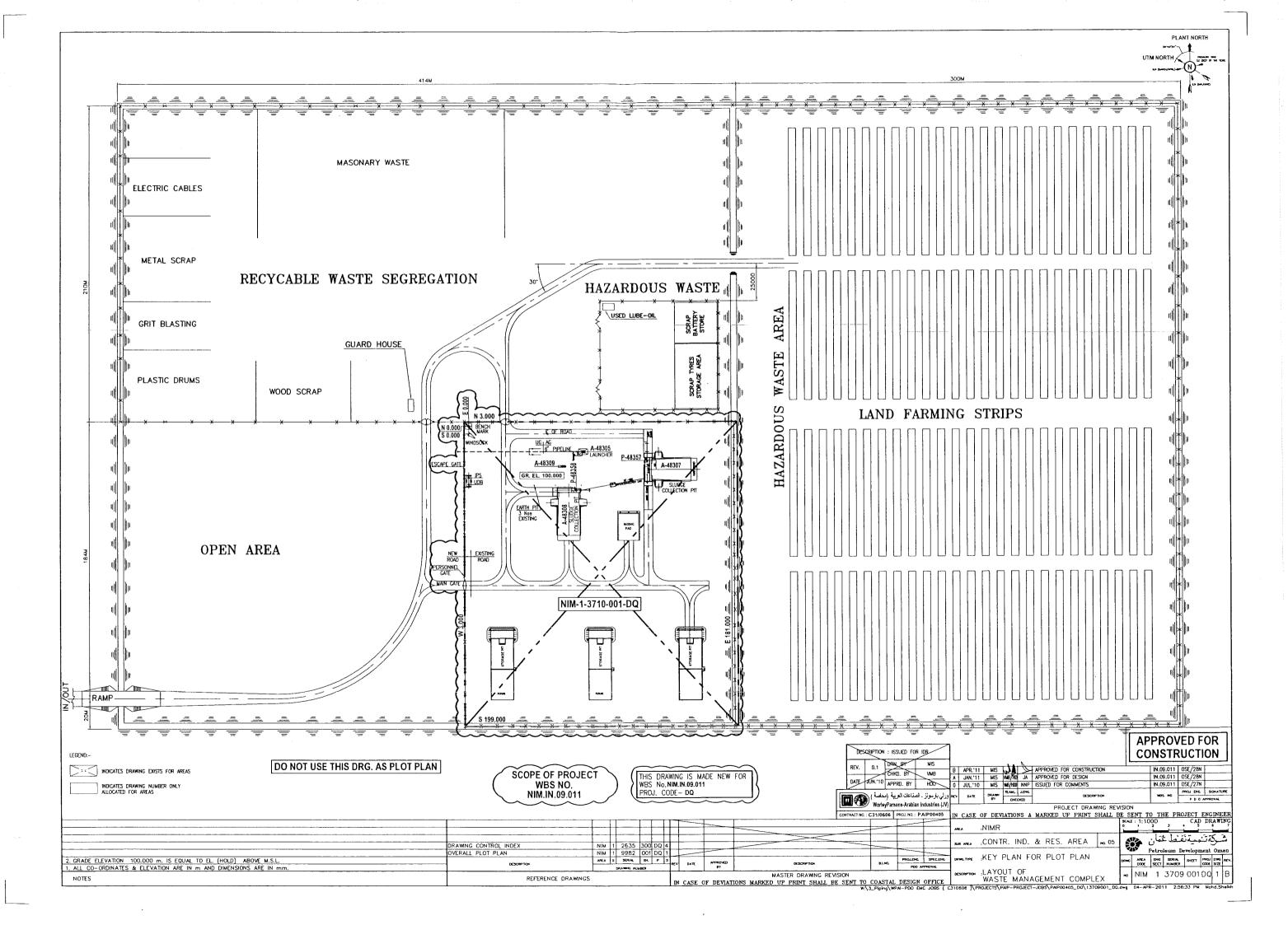
\* Specified in multiples of 5 mm † Specified in multiples of 25 mm

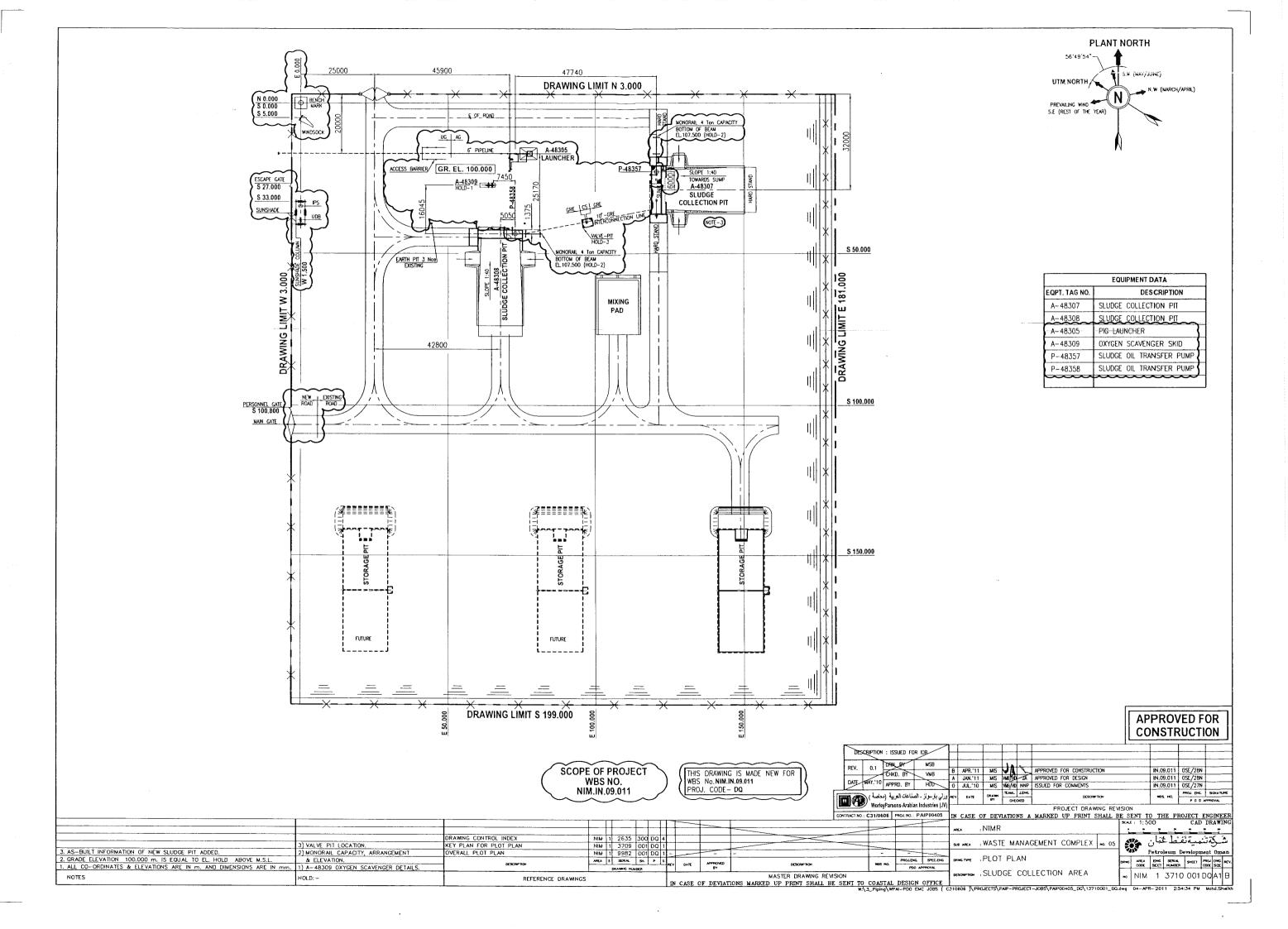
Sheet No.: 1 of 1

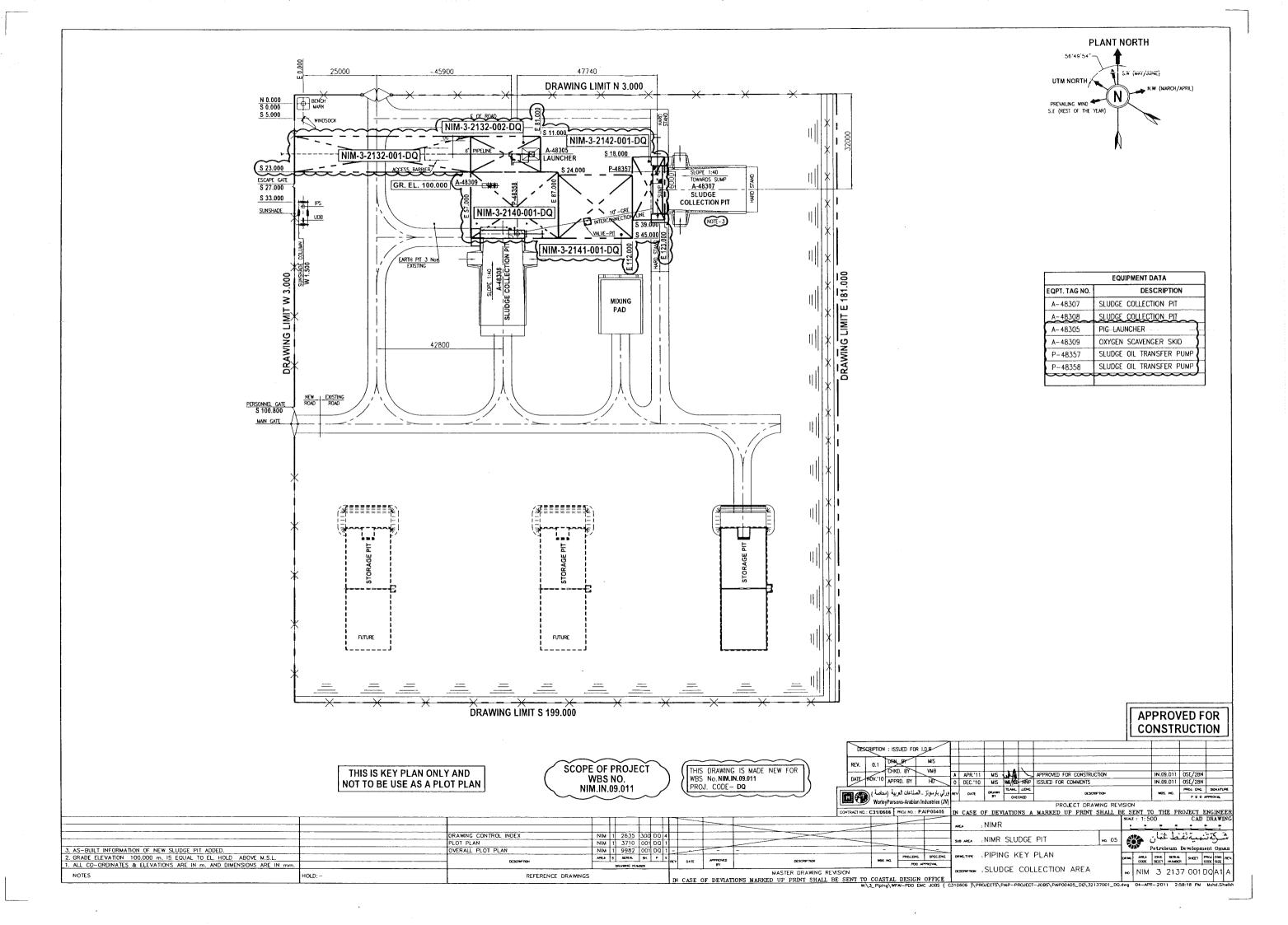
Mechanical Drawings

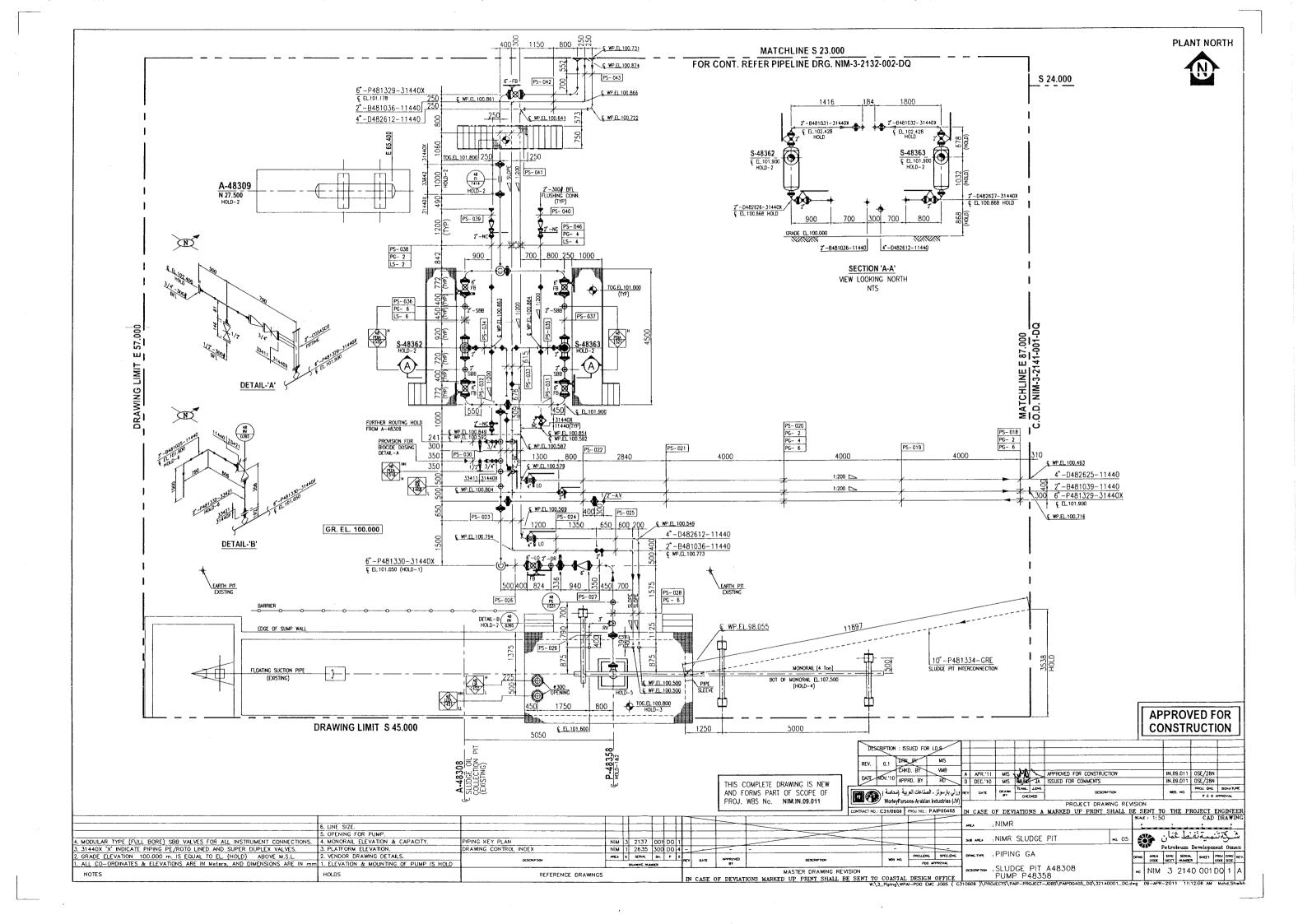
PAIP00405- Nimr Sludge Pit Up gradation.



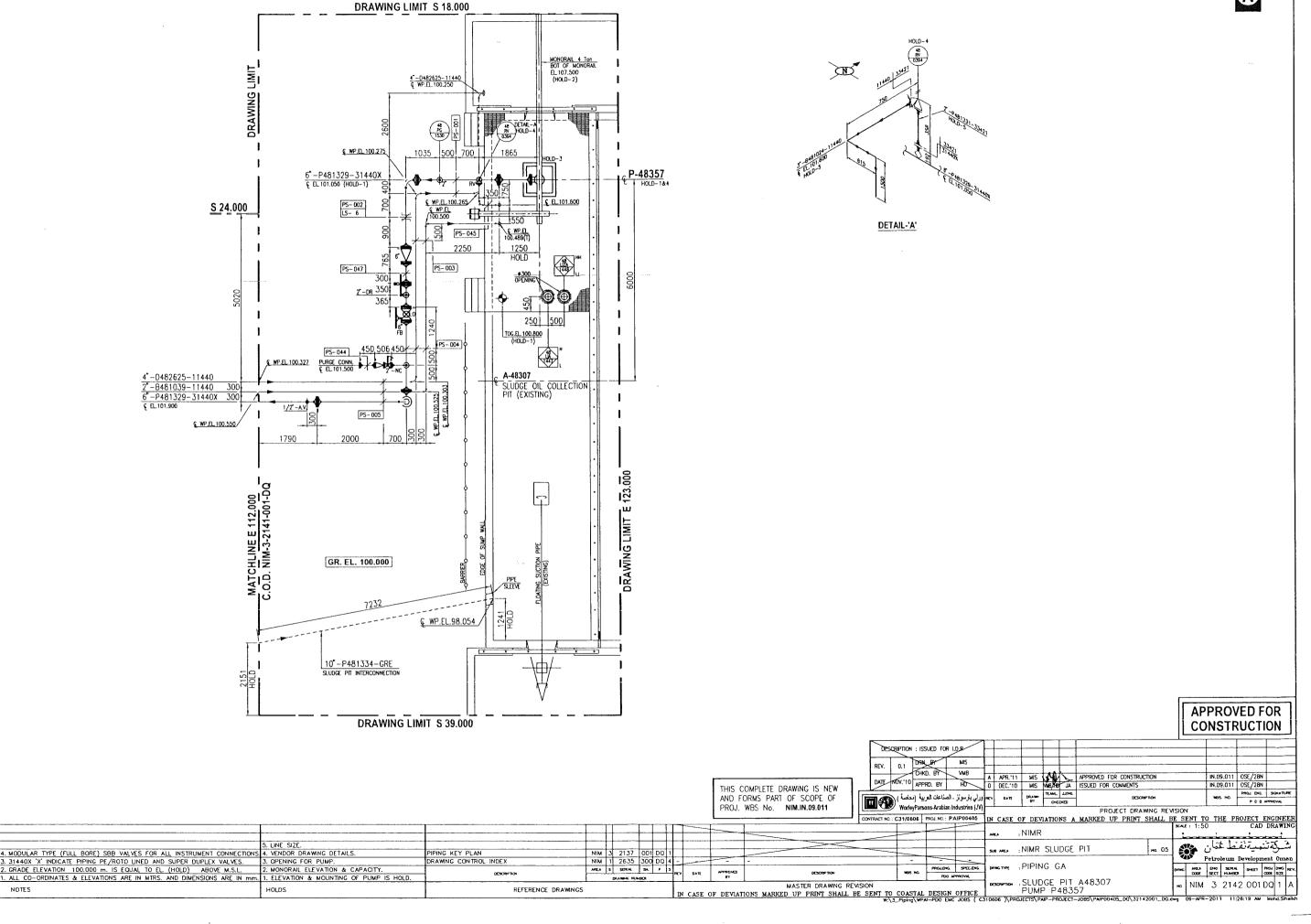


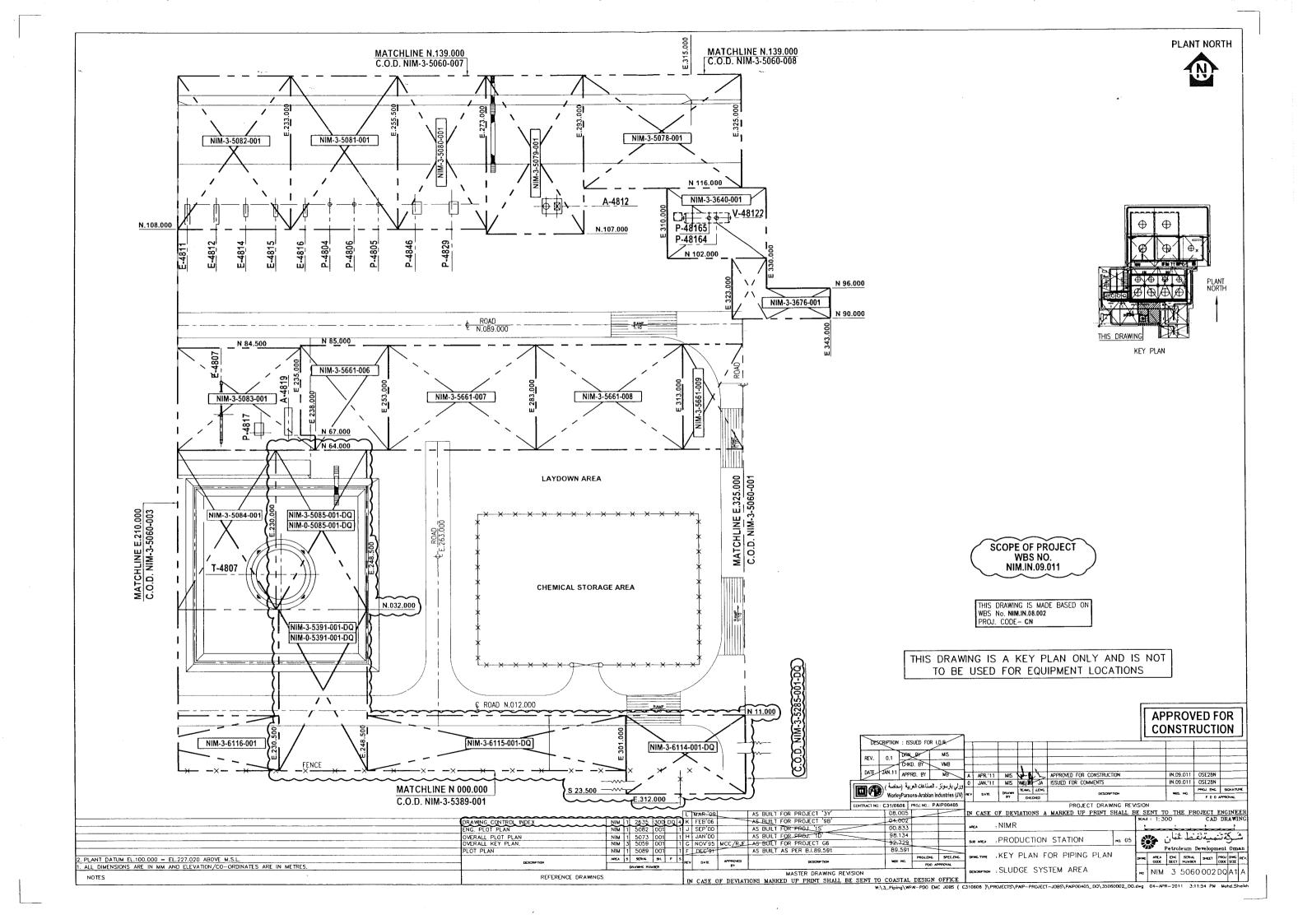


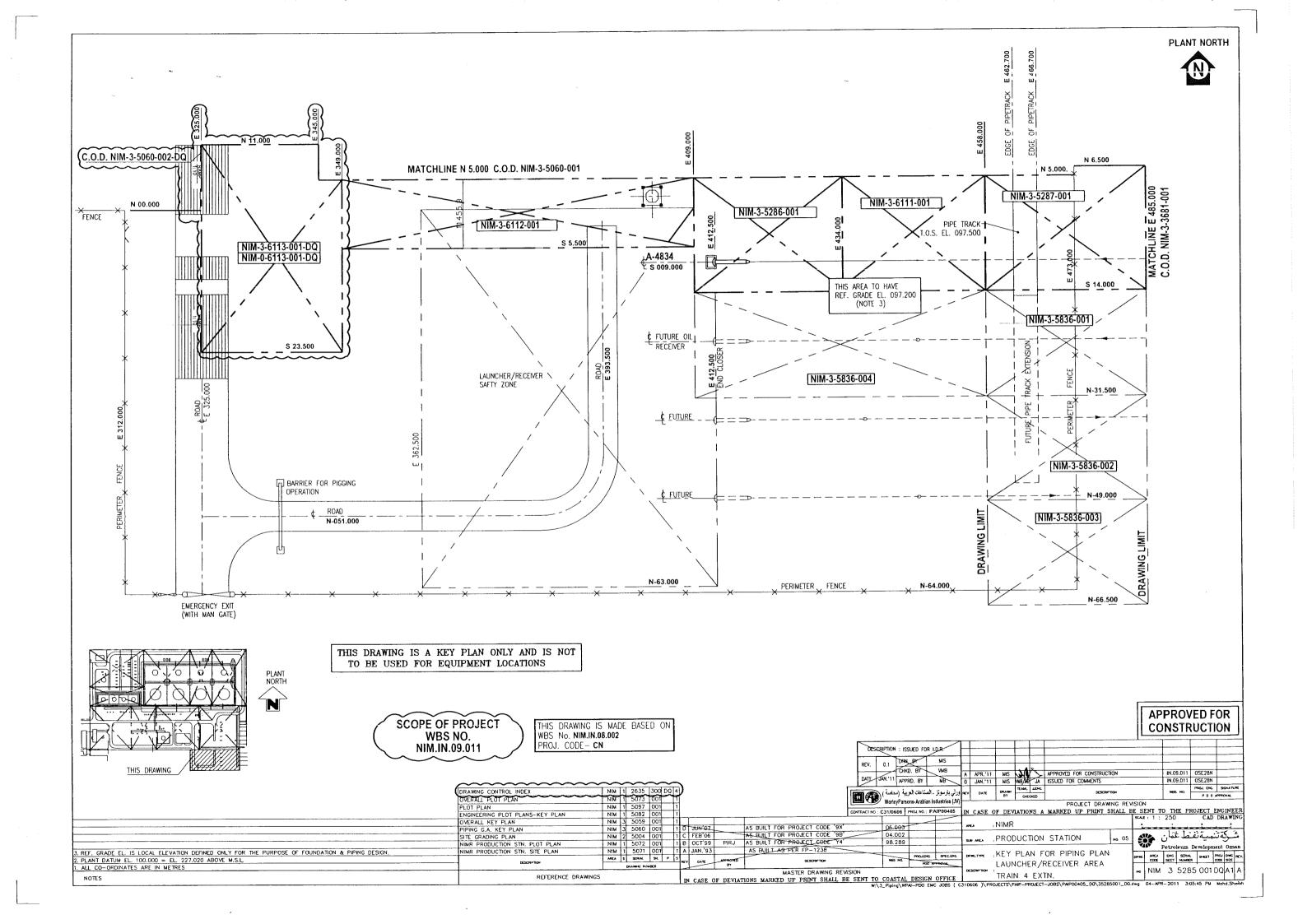


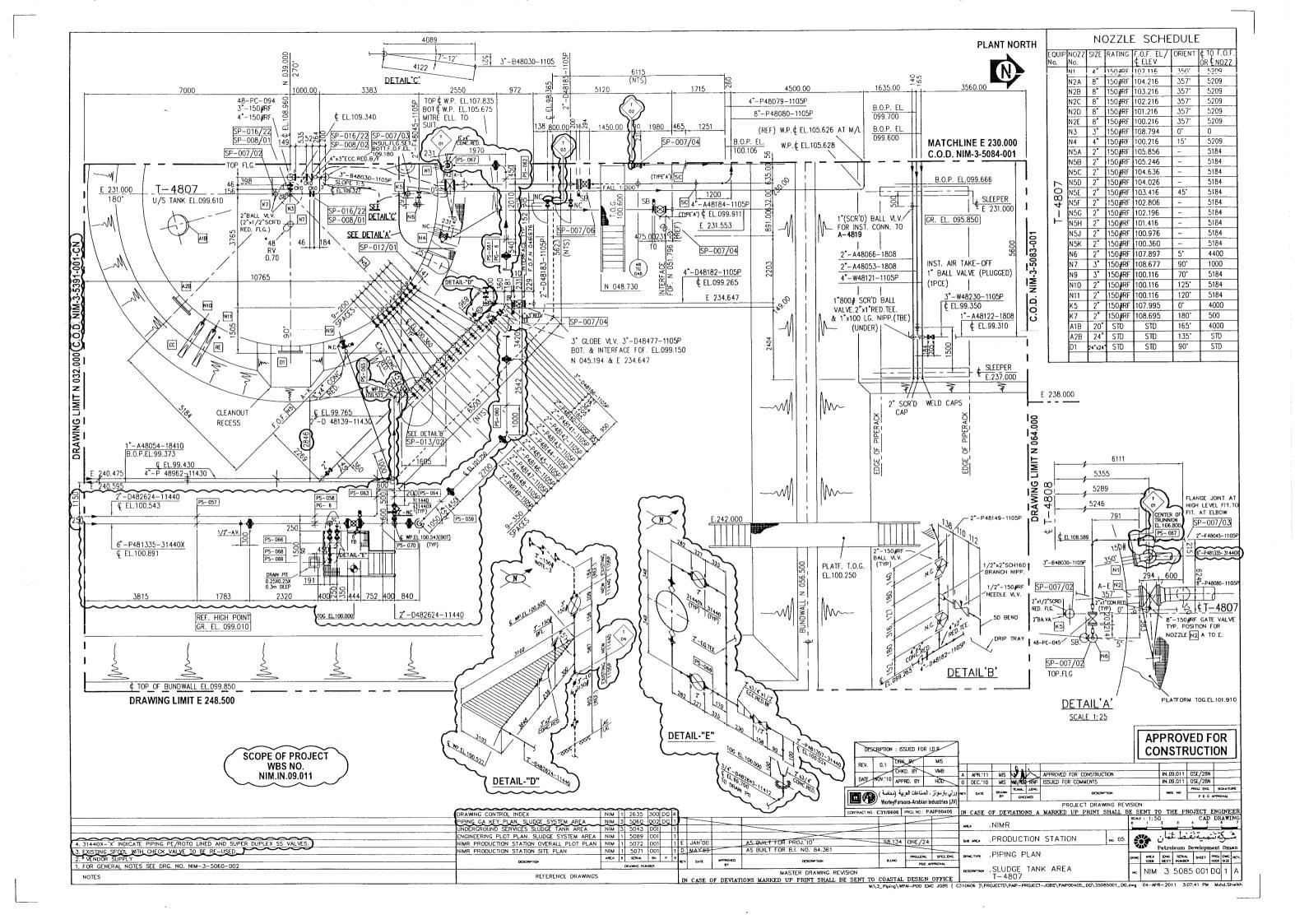


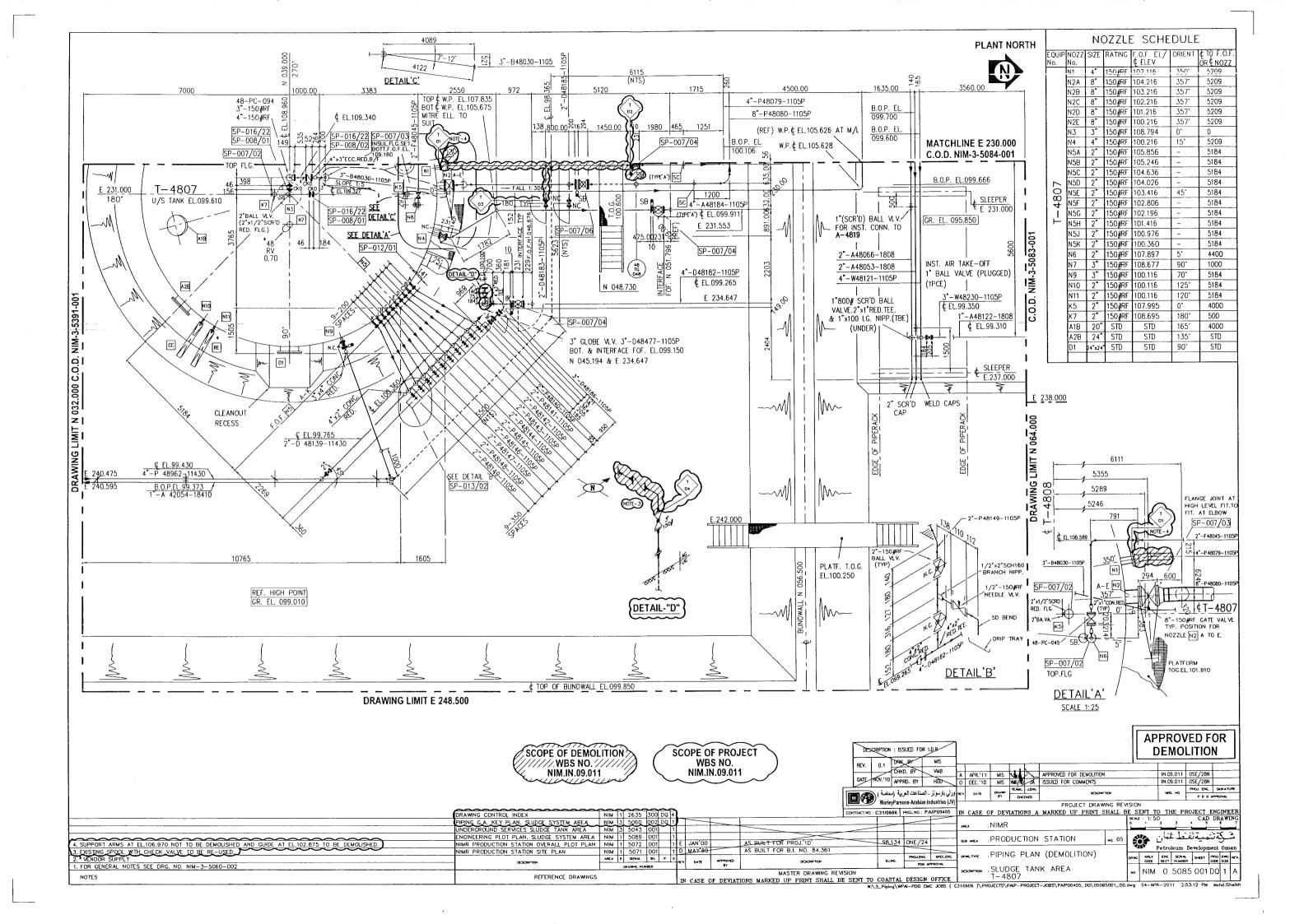


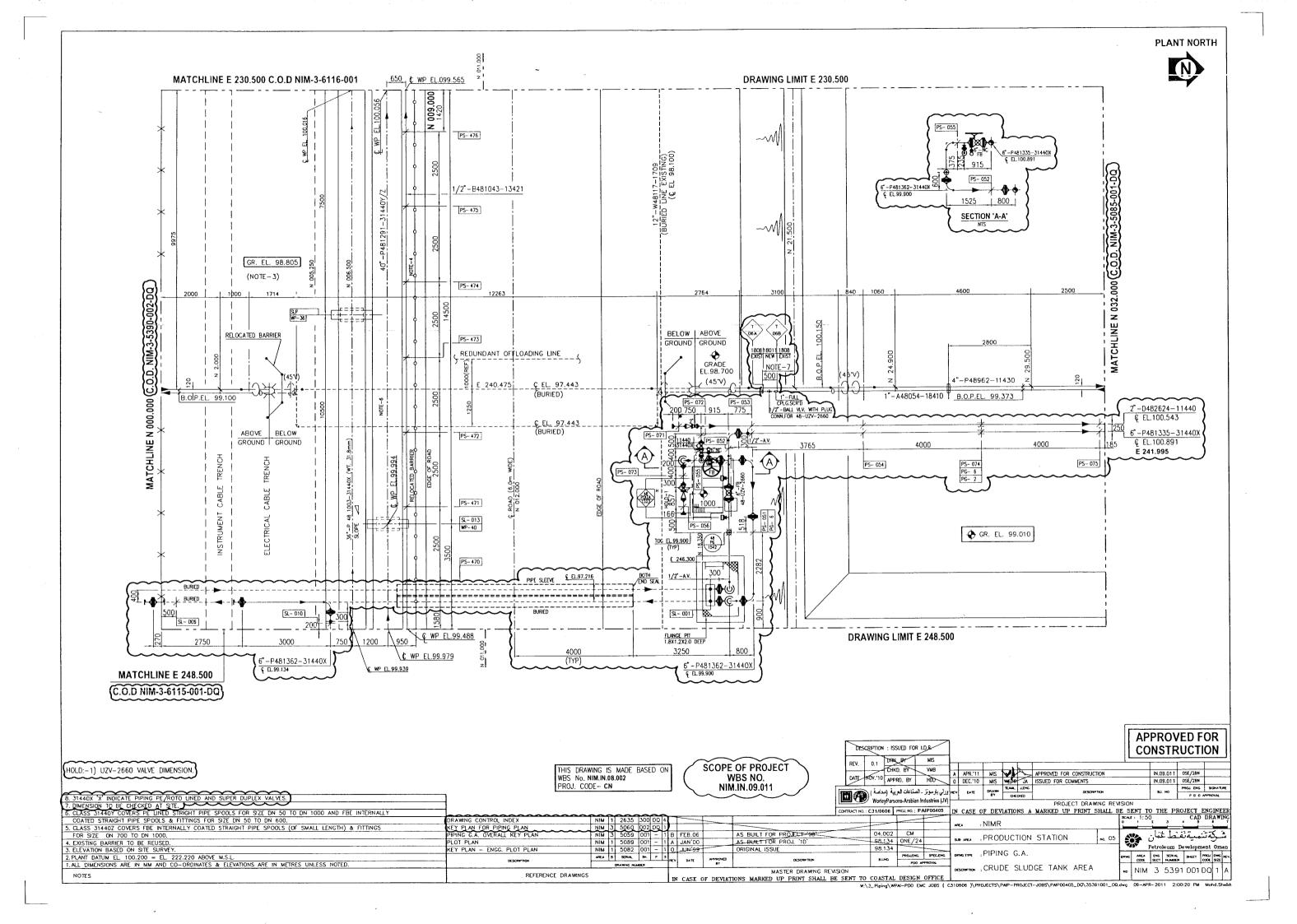




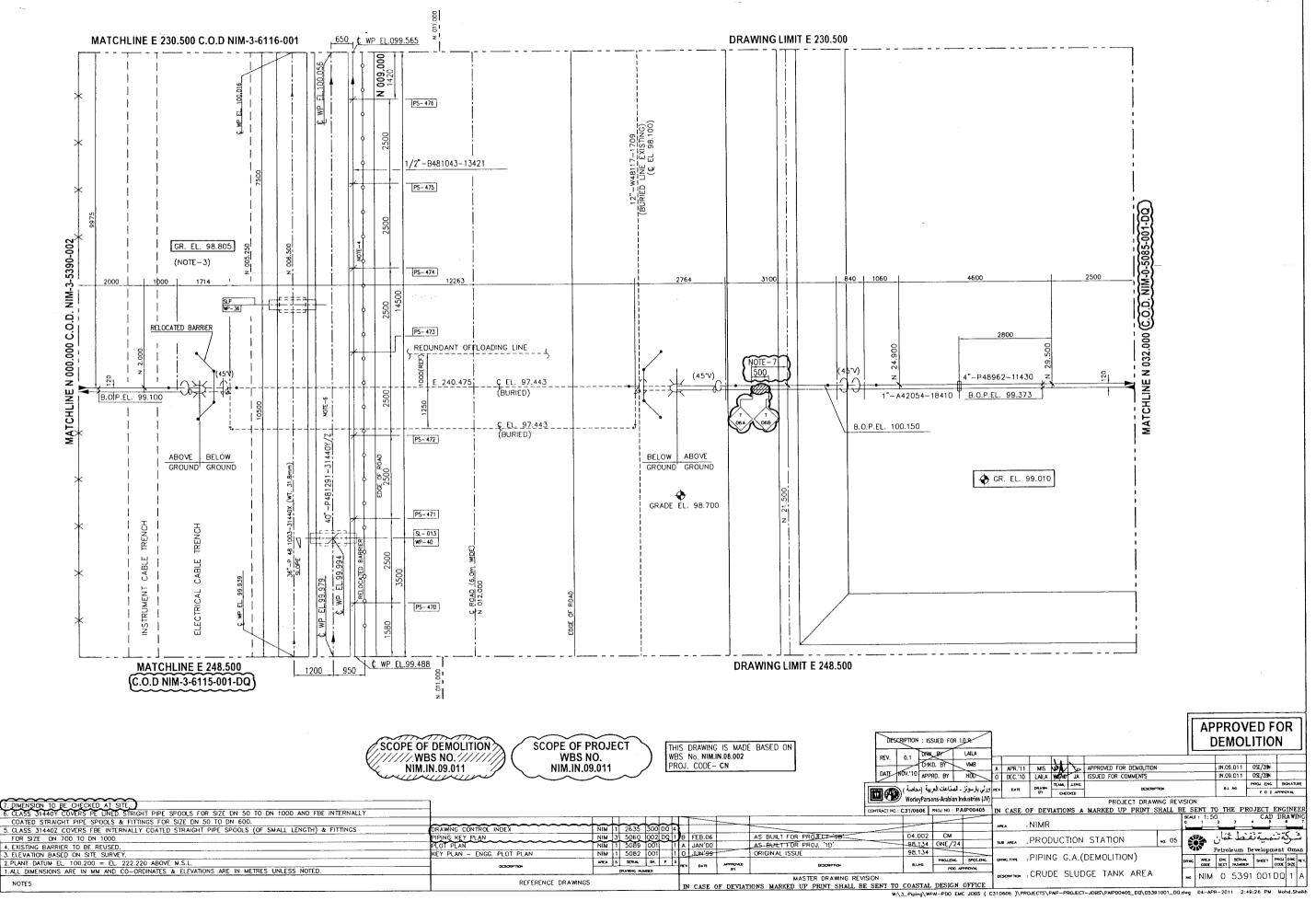




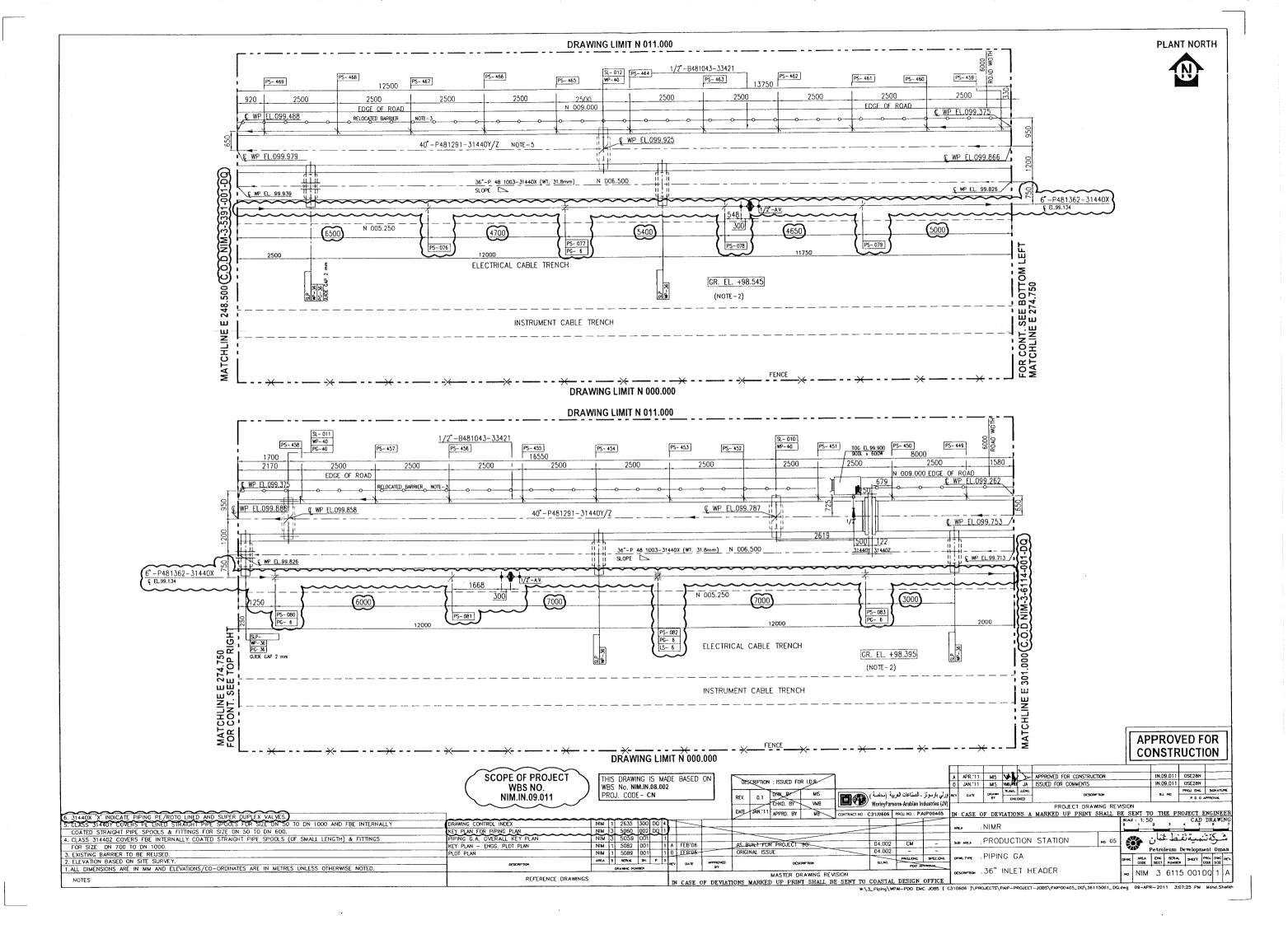


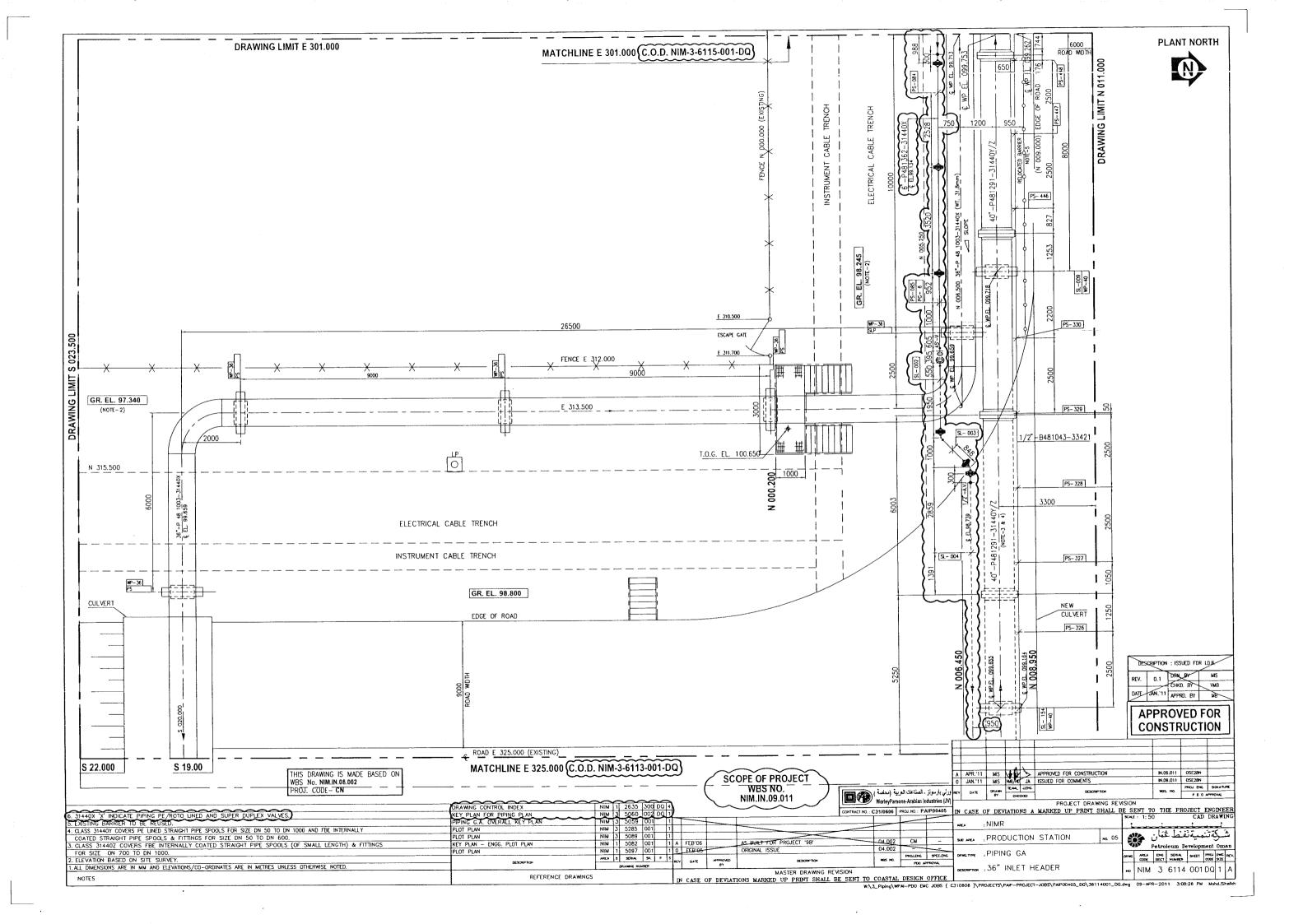


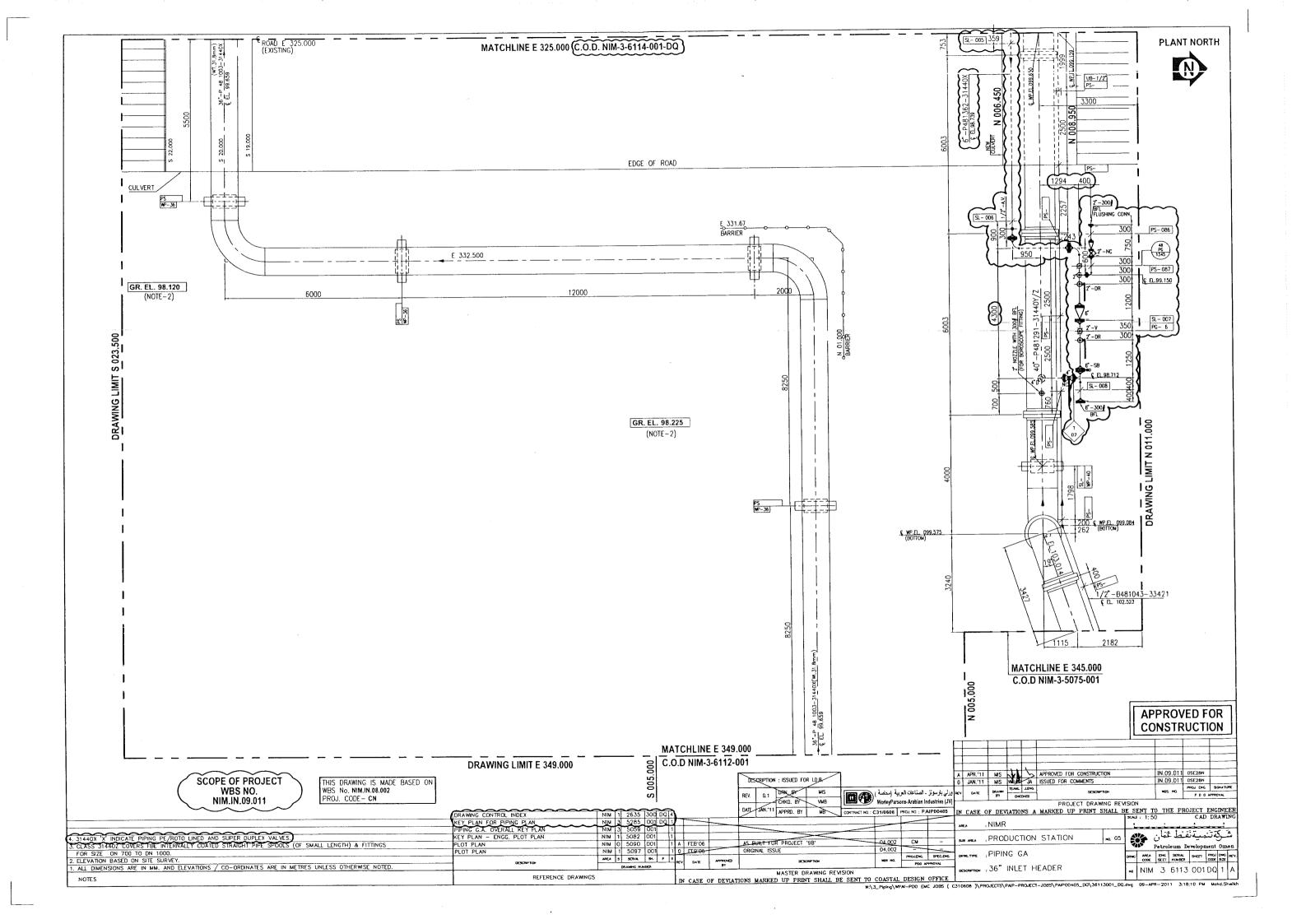


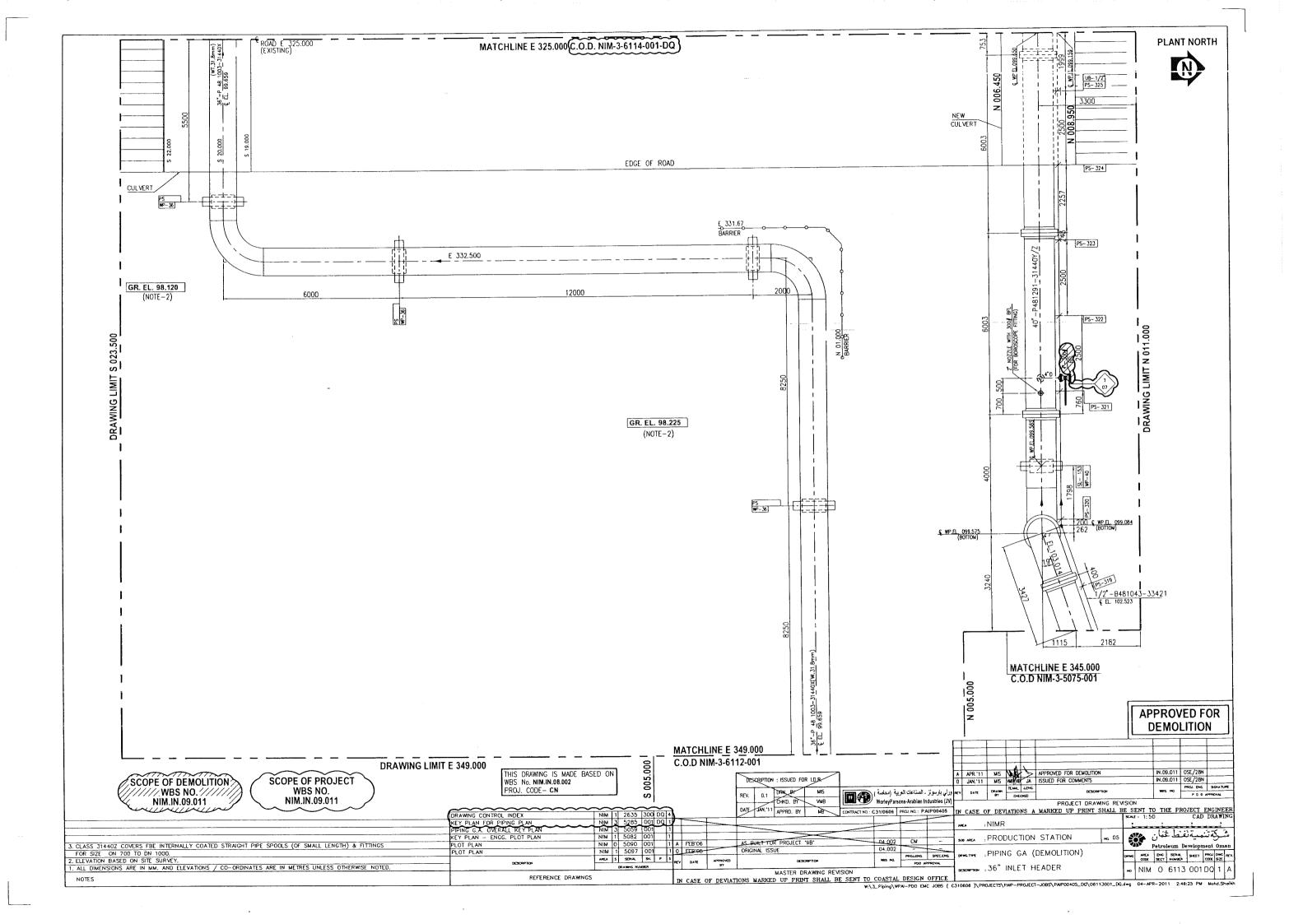


NOTES









# COVER SHEET TIE-IN SCHEDULE NIMR SLUDGE PITS SYSTEM UPGRADE

### **APPROVED FOR** CONSTRUCTION APPROVED FOR CONSTRUCTION IN.09.011 | OSE/28N APR.'11 JAN.'11 RE-ISSUED FOR COMMENTS IN.09.011 | OSE/28N DEC.'10 WMB/HDD NNP ISSUED FOR COMMENTS IN.09.011 OSE/28N TEAML. J.ENG. PROJ. ENG. DRAWN DATE DESCRIPTION W.B.S. NO. CHECKED P D O APPROVAL WorleyParsons-Arabian Industries (JV) PROJECT DRAWING REVISION CONTRACT NO.: **C31/0606** PROJ. NO.: **PAIP00405** IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER CAD DRAWING : NIMR : NIMR SLUDGE PIT DRAWING CONTROL INDEX REFER Petroleum Development Oman -2635-300-DQ :TIE-IN SCHEDULE PROJ.ENG. SPEC.ENG. APPROVED DATE DESCRIPTION W.B.S. NO. DESCRIPTION : COVER SHEET NOTES/REFERENCE DRAWINGS MASTER DRAWING REVISION NIM 3 2143 001 DQ 3 B IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE W:\3\_Piping\WPAI-PDO EMC JOBS (C310606)\PROJECTS\PAIP-PROJECT-JOBS\PAIP00405\_DQ\32143001\_DQ.dwg 12-APR-2011 5:28:27 PM Mohd.Sheikh

				,,				REVIS	SION &	ISSUE DATE	OF DOCUM	ENT				
SHEET	DESCRIPTION	0 DEC.'10	A JAN.'11	B APR.'1	1 C		D	Е		F	G	Н	1	J	К	L
NO.				I					R	EVISION OF	SHEET					
001	COVER SHEET	0	А	В												
002	INDEX AND ISSUE SHEET	0	А	В												
003	TIE-IN DESCRIPTION SHEET	0	А	В												
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APPROVED FOR CONSTRUCTION

SCALE: NTS CAD DRAWING O 1 2 3 4 5 6 7

SUB AREA : NIMR SLUDGE PIT NO. 5

DRWG.TYPE : TIE—IN SCHEDULE

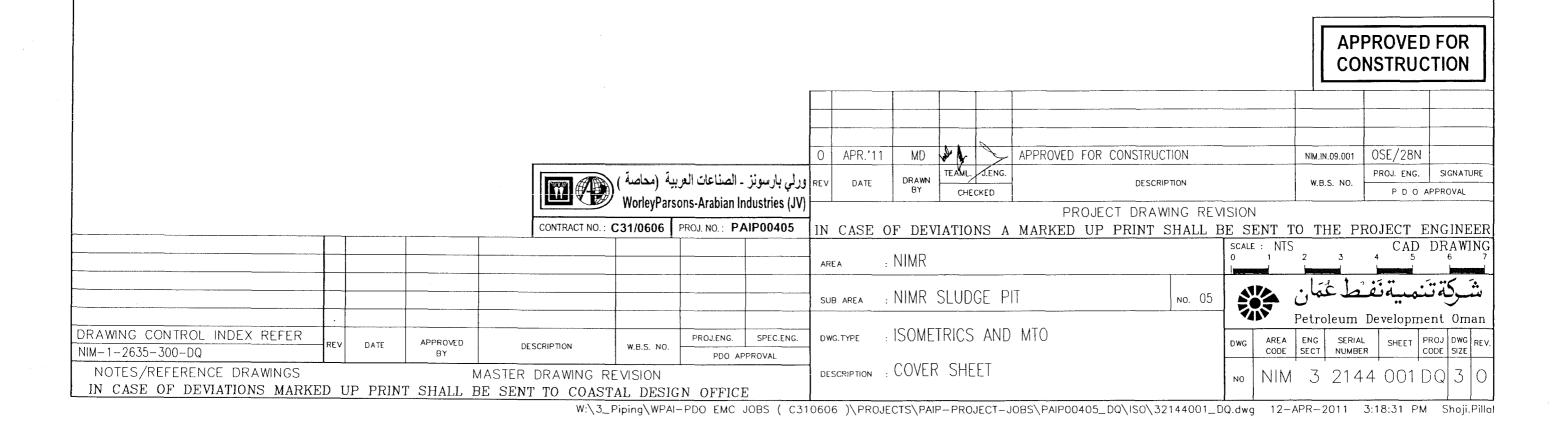
DESCRIPTION : INDEX AND ISSUE SHEET

DESCRIPTION : INDEX AND ISSUE SHEET

NO NIM 3 2143 002 DQ 3 B

	TIE-IN NO.	DESCRIPTION	TIE-IN TYPE	P.E.F.S.	PIPING PLAN	LINE NO.	ISOMETRIC	REMARKS
	T 01	DISMANTLE THE EXISTING PIPE SPOOL AND CONNECT NEW 4" - 150# FLANGED PIPE SPOOL.	F2	NIM-1-5030-001-DQ	NIM-3-5085-001-DQ	P48079	NIM-3-2144-016-DQ	
	(T) (02)	DISMANTLE THE EXISTING PIPE SPOOL AND ADD NEW 4" — 150# BLIND FLANGE.	F3	NIM-1-5030-001-DQ	NIM-3-5085-001-DQ	P48079	NIM-3-2144-021-DQ	
	(n) (n) (n) (n) (n) (n) (n) (n) (n) (n)	DISMANTLE THE EXISTING PIPE SPOOL AND ADD NEW 2" - 150# BLIND FLANGE.	F3	NIM-1-5030-001-DQ	NIM-3-5085-001-DQ	D48183	NIM-3-2144-040-DQ	
	(T) (04)	DISMANTLE THE EXISTING PIPE SPOOL AND CONNECT NEW 3" - 150# FLANGED PIPE SPOOL.	F2	NIM-1-5040-002-DQ	NIM-3-5085-001-DQ	D48477	NIM-3-2144-037-DQ	
	O6A	DISMANTLE THE EXISTING SCREWED PIPE AND CONNECT THE NEW PIPE SPOOL WITH UNION JOINTS.	T4	NIM-1-5054-001-DQ	NIM-3-5391-001-DQ	A48054	NIM-3-2144-032-DQ	
	(T) (06B)	CUT THE EXISTING PIPE AND CONNECT THE NEW PIPE SPOOL WITH SCREWED COUPLING.	T5	NIM-1-5054-001-DQ	NIM-3-5391-001-DQ	A48054	NIM-3-2144-032-DQ	
	(Î)	DISMANTLE THE EXISTING BLIND FLANGE AND CONNECT NEW 4" - 300# FLANGED PIPE SPOOL.	F2	NIM-1-3637-001-DQ	NIM-3-6113-001-DQ	P481291	NIM-3-2144-017-DQ	
	B1 WELD	⊢	-¶ B5 ⊦		B7			
	FLANGED	F2 F	— F5	F6	F7			
	THREADED FI	T2 T3 T4	T5 <u></u>		T7			APPROVED FOR CONSTRUCTION
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## COVER SHEET ISOMETRIC AND MTO. NIMR SLUDGE PITS SYSTEM UPGRADE



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007	ISSUE SHEET	N/A															
800	PE LINING DETAILS	0															
009	GENERAL NOTES	0															
010	ISO SYMBOL SHEET	0															

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ورلي بارسونز - الصناعات العربية (محاصة ) (WorleyParsons-Arabian Industries (JV)

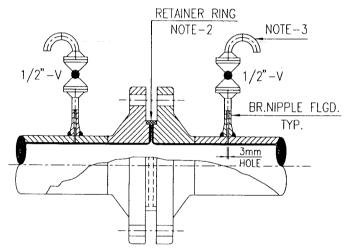
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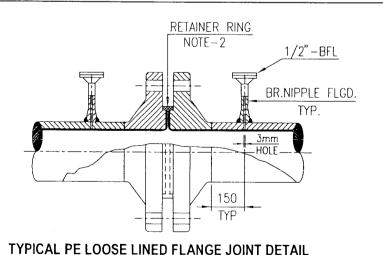
## PIPE SPOOL INTERNAL PE LINING

## RETAINER RING NOTE-2

## TYPICAL ROTO LINED FLANGE JOINT DETAIL



TYPICAL PE LOOSE LINED FLANGE JOINT DETAIL
OIL & GAS SERVICE



WATER SERVICE

## NOTES:

- 1. REFER ERD-43-15 FOR SPECIFICATION OF POLYETHYLENE LINER.
- 2. RETAINING RING SHALL BE SUPPLIED BY THE PE LINING VENDOR.
- 3. ANNULUS VENT ORIENTATION TO BE DECIDED AT SITE.
- 4. PIPE SPOOLS SHALL BE PE LINED-LOOSE OR ROTO LINED DEPENDING ON THE SPOOL LENGTH GEOMETRY.
- 5. TABLE-A ALL DIMENSIONS SHALL BE CONSIDERED AS DIAGONAL LENGTH.
- 6. GUIDELINE FOR ROTO-LINING OF SPOOL IS SHOWN IN THE TABLE-A BELOW.

ROTO L	TABLE-A (NOTE- INING-DIMENSIONAL		.S
NOMINAL SIZE	STRAIGHT LENGTH SPOOLS -(Max.)	BENDS (Max.)	TEE (Max.)
3"	2500mm	2500mm	2500mm
4" TO 12"	3500mm	3500mm	3500mm
14" TO 20"	3500mm	3350mm	3350mm
24"	3150mm	3300mm	3000mm
26"	3000mm	3300mm	3000mm
30"	3000mm	3300mm	3000mm
34"	3000mm	3300mm	2500mm
36"	3000mm	3300mm	2100mm
40"	2800mm	3300mm	
42"	2800mm		
	IMENSION IS NOT APPL RE THAN 2250 Kgs.	ICABLE IF SPO	OL

- 7. ENSURE THAT ALL ROTO LINED PIPE SPOOL DIMENSIONS ARE VERIFIED AND APPROVED BY PE LINING CONTRACTOR PRIOR TO FABRICATION.
- 8. PIPE SPOOL DIMENSIONS ARE GIVEN FROM THE FACE OF CS FLANGE (EXCLUDING LINING THICKNESS)
- 9. FOR ROTO LINING MIN. BRANCH OFF SIZE SHALL BE 2".
- 10. FOR PE LOOSE LINING MIN. PIPE SIZE SHALL BE 4".
- 11. FOR ON PLOT PIPING, PE LOOSE LINER STRAIGHT PIPE SPOOL LENTGTH OF 19.0 M.(Max.) SHALL BE CONSIDERED.
- 12. THE PE LINED PIPE SPOOL TO BE FABRICATED WITH THE INSIDE EDGES OF THE RAISED FACE FLANGES GROUND TO RADIUS OF 6mm.
- 13. FOR PE LINED PIPE SPOOLS, INTERNAL WELDING PENETRATION & BURNS SHALL BE CONTROLLED & GROUND FLUSH WITH THE WALL WHEREVER POSSIBLE TO GRIND FROM INSIDE.

APPROVED FOR CONSTRUCTION

CAD DRAWING

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ورلي بارسونز ـ الصناعات العربية (محاصة )

WorleyParsons-Arabian Industries (JV)

CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

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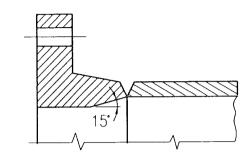
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## **GENERAL NOTES**

- 1. ALL DIMENSIONS ON ISOMETRICS ARE IN MILLIMETRES. ELEVATIONS AND CO-ORDINATES ARE IN METRES, UNLESS OTHERWISE NOTED.
- 2. ROUTING INDICATED FOR LINES 1 1/2" & BELOW IS FOR GUIDANCE ONLY. EXACT ROUTING TO BE DECIDED AT SITE.
- 3. FIELD WELDS TO BE DECIDED AT SITE BY PIPING CONTRACTOR.
- 4. PIPES, PIPE FITTINGS AND VALVES ON ISOMETRIC DRAWINGS ARE SHOWN IN ACCORDANCE WITH SHEET NO. 010
- 5. BUILT-IN DIMENSIONS FOR VALVES ON ISOMETRIC DRAWINGS ARE GENERALLY INCLUDING THE THICKNESS OF GASKETS.
- 6. NO ALLOWANCE FOR WELD GAP IS GIVEN ON ISOMETRIC DRAWINGS. OVERALL DIMENSIONS OF CLOSED ASSEMBLIES OF FITTINGS, OR FITTINGS AND FLANGES ARE SHOWN ON THE BASIS OF THE NET SUM OF THE NOMINAL DIMENSIONS OF THE PIPE COMPONENTS.
- 7. THE BENDING RADIUS OF PULLED BENDS SHALL NOT BE LESS THAN 5 x D (D=NOMINAL PIPE SIZE).
- 8. UNLESS NOTED ON ISOMETRIC, ORIENTATION OF SPECTACLE BLINDS SHALL BE AS FOLLOWS:
  - (a) SPECTACLE BLINDS IN HORIZONTAL LINES: UP
  - (b) SPECTACLE BLINDS IN VERTICAL LINES : AS SHOWN IN PIPING GENERAL ARRANGEMENT DWG.
- 9. IN GENERAL THE MATERIAL FOR WELDED FLOOR STANDS AND WELDED DUMMY SUPPORTS IS INCLUDED IN THE 'LIST OF MATERIAL' OF THE PIPELINE CONCERNED.
- 10. LOCATION OF PIPE SUPPORTS ARE SHOWN WITH PIPE SUPPORT NOS. ON PIPING ARRANGEMENT DRAWINGS. AND FOR PIPE ATTACHMENTS SUCH AS SHOES, TRUNNIONS AND DUMMIES ETC.

  REFER LIST OF DRAWING NO. NIM 2 1842 001- DQ, NIM 2 1842 001- DQ
- 11. FOR PE LINING DETAILS REFER SHEET NO. 008
- 12. DRAWING NO. FOR BILL OF MATERIAL SHEET IS NOTED ON ISOMETRIC. ALSO REFER ISO—INDEX WHICH GIVES LINE WISE ISO SHEET NO. & MTO SHEET NO. REFER LINE LIST FOR PEFS NO. AND DESCRIPTION OF "FROM" & "TO"
- 13. FOR INSULATED LINES REFER SPEC. DEP.30.46.00.31.GEN.
- 14. PIPE MATERIAL CONNECTED TO EQUIPMENT (LOOSE MATERIAL LIKE VENTS, DRAINS, PRESSURE CONNECTIONS AND STAND PIPE ETC.) ARE SHOWN ON ISOMETRIC DRAWINGS AS VESSEL TRIM.
- 15. ITEMS HAVING RATINGS NOT IN LINE WITH PIPE CLASS ARE CALLED OUT.
- 16. HANDWHEEL / WRENCH ORIENTATION FOR THE 2" AND ABOVE VALVES REFER PIPING PLAN.

17. CHAMFER OF 15° AS SHOWN BELOW SHALL BE APPLIED IN CASE OF PIPE CLASS CHANGE. ALL OTHER WELD-END PREPARATIONS SHALL BE IN ACCORDANCE WITH APPLICABLE ASME AND/OR ANSI STANDARD.



- 18. PIPE SUPPORTS AND DIMENSIONS MARKED WITH CLOUD ARE UNDER HOLD AWAITING VENDOR INFORMATION.
- 19. FOR STANDARD SYMBOLS REFER SHEET NO.010
- 20 PIPE FABRICATION AND TESTING SHALL BE AS PER THE FOLLOWNG SP & DEP'S.
  - SP-1173 SPECIFICATION FOR WELDING OF ON-PLOT PIPE WORK (AMMENDMENTS/SUPPLEMENTS TO ASME B31.3).
  - SP-1176 NON-DESTRUCTIVE EXAMINATION(AMMENDMENTS/SUPPLEMENTS TO ASME BPV CODE SECTION V).
  - SP-2051 SPECIFICATION FOR FLUSHING, PRESSURE TESTING, PICKLING AND SENSITIVE LEAK TESTING OF MECHANICAL EQUIPMENT AND PIPING.
  - SP-2020 FLANGE CONNECTIONS-BOLTING TORQUING AND TENSIONING.
  - SP-1246 SPECIFICATION FOR PAINTING & COATING OF OIL AND GAS PRODUCTION FACILITIES.
  - DFP 31.38.01.31 SHOP AND FIELD FABRICATION OF PIPING.

APPROVED FOR CONSTRUCTION

SCALE: NTS O 1 1 2 3 4 CAD DRAWING

SUB AREA : NIMR SLUDGE PIT

NO. 05

Petroleum Development Oman

DWG. TYPE : ISOMETRICS AND MTO

DESCRIPTION : GENERAL NOTES

DESCRIPTION : GENERAL NOTES

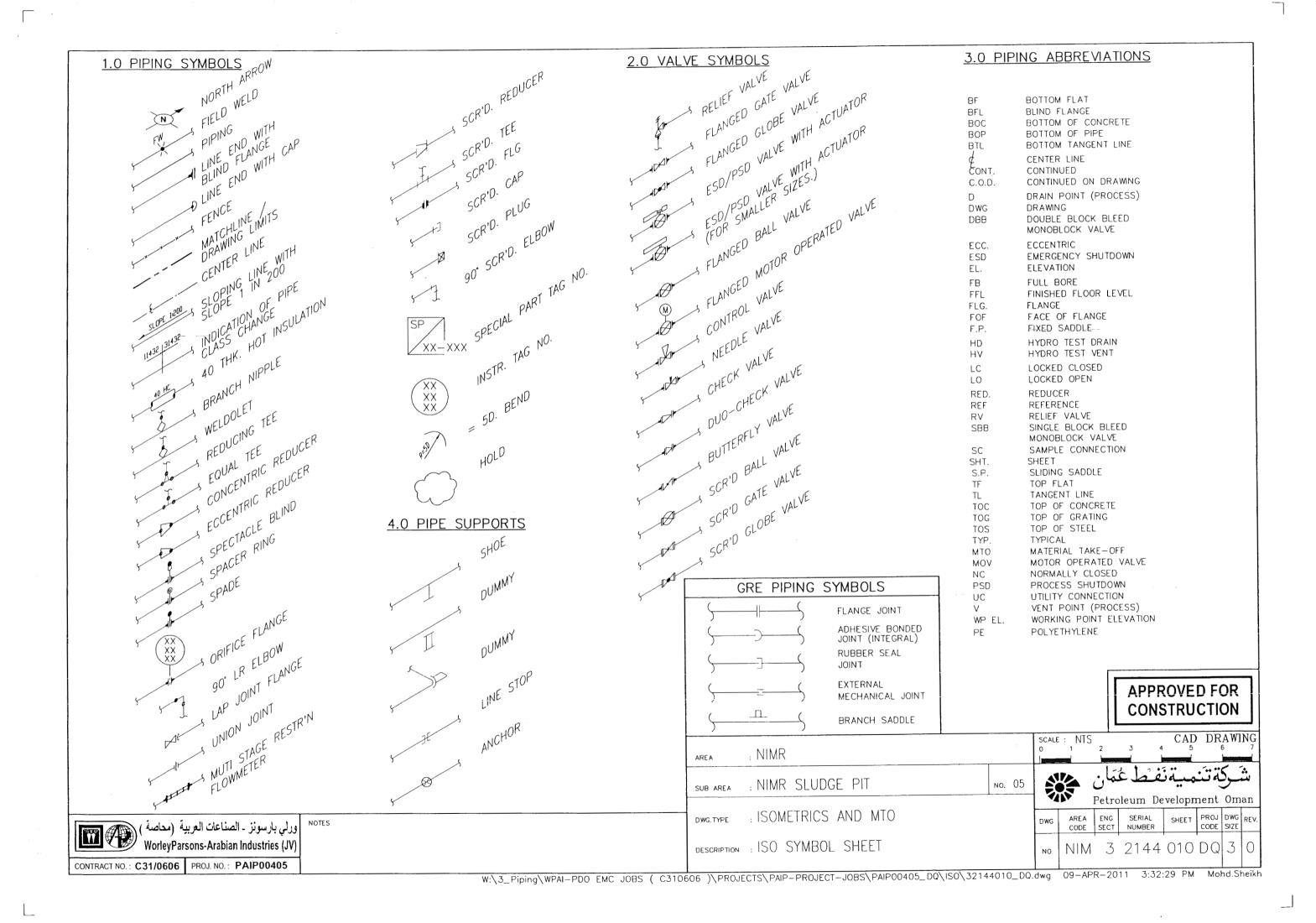
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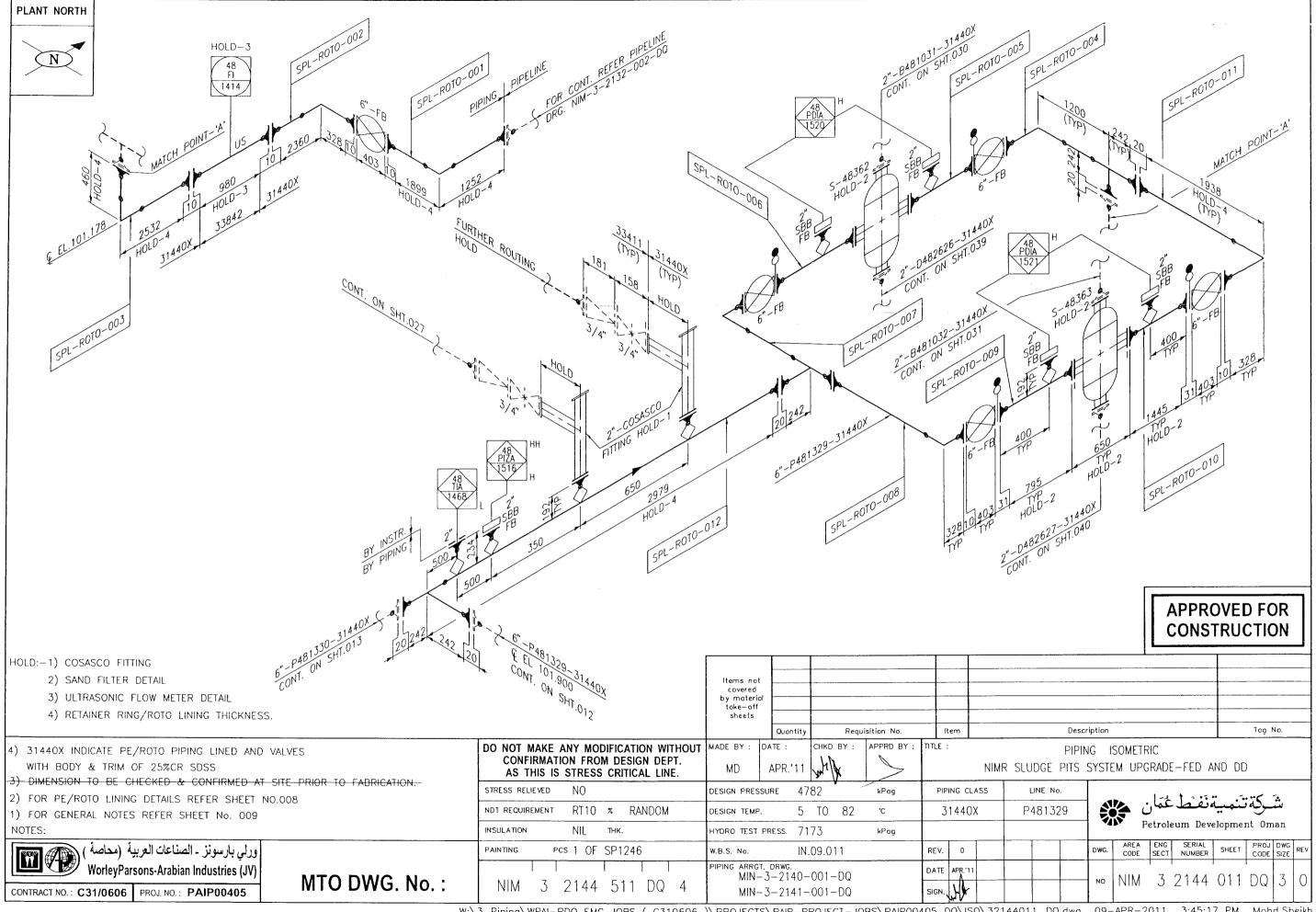
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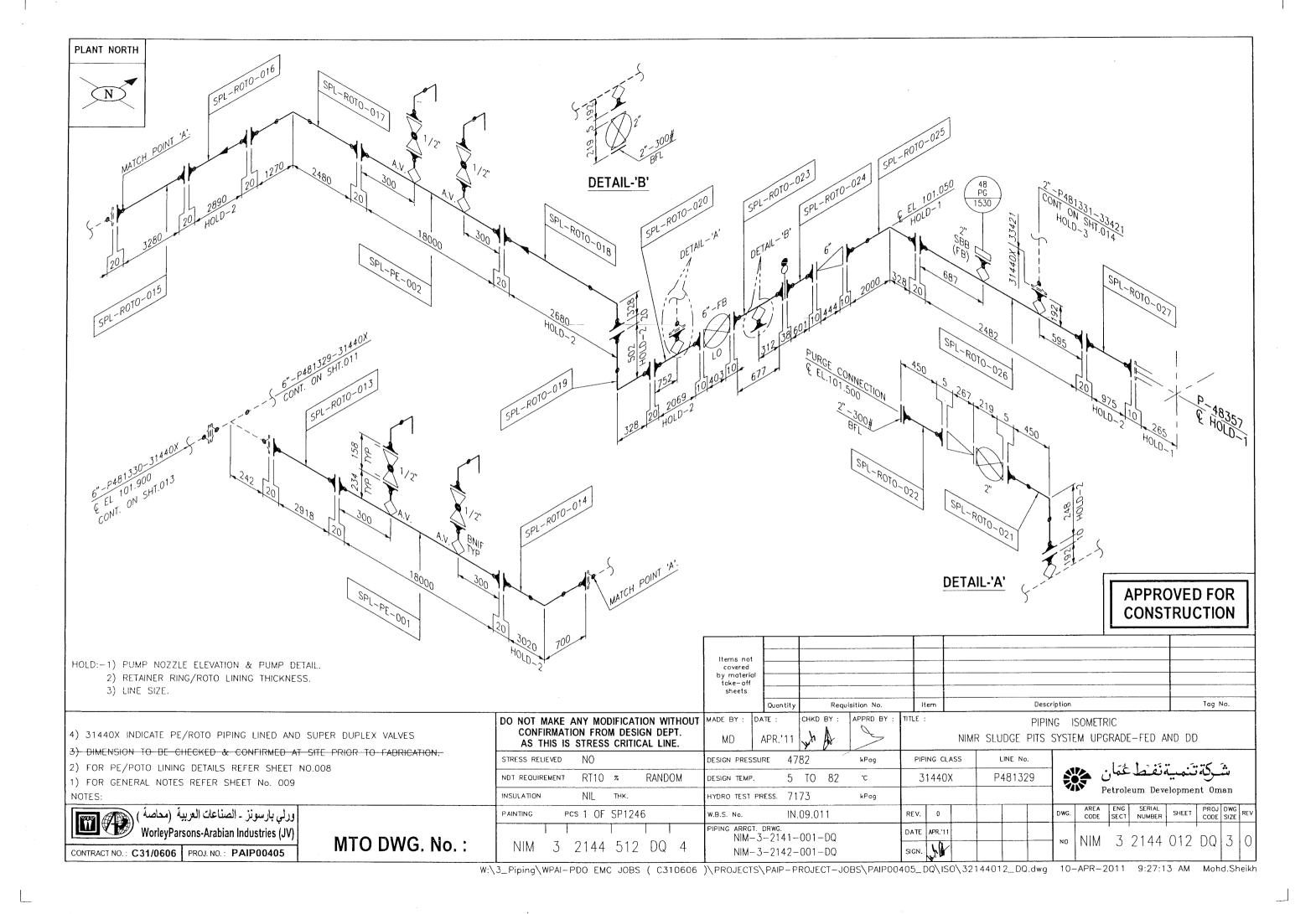
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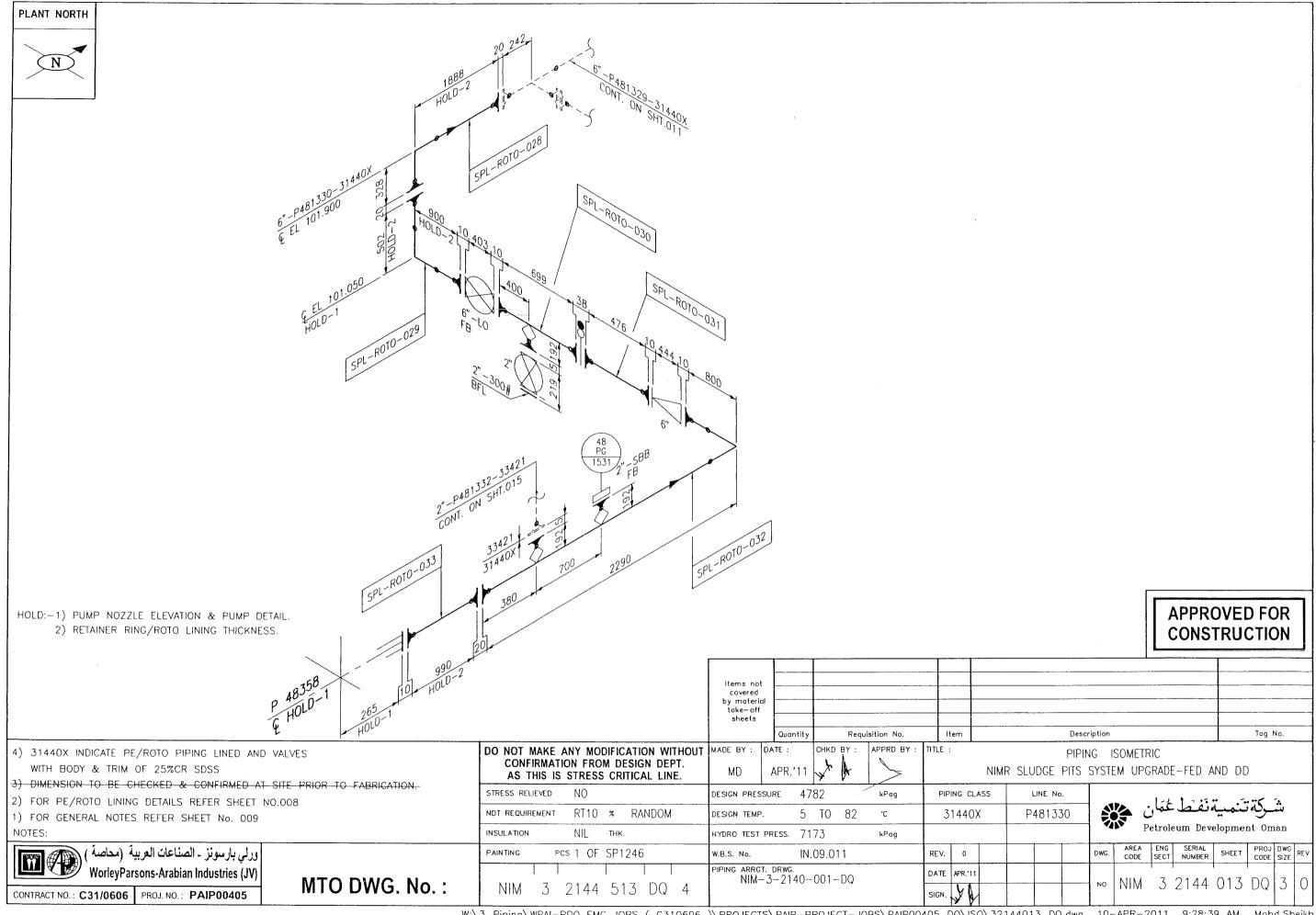
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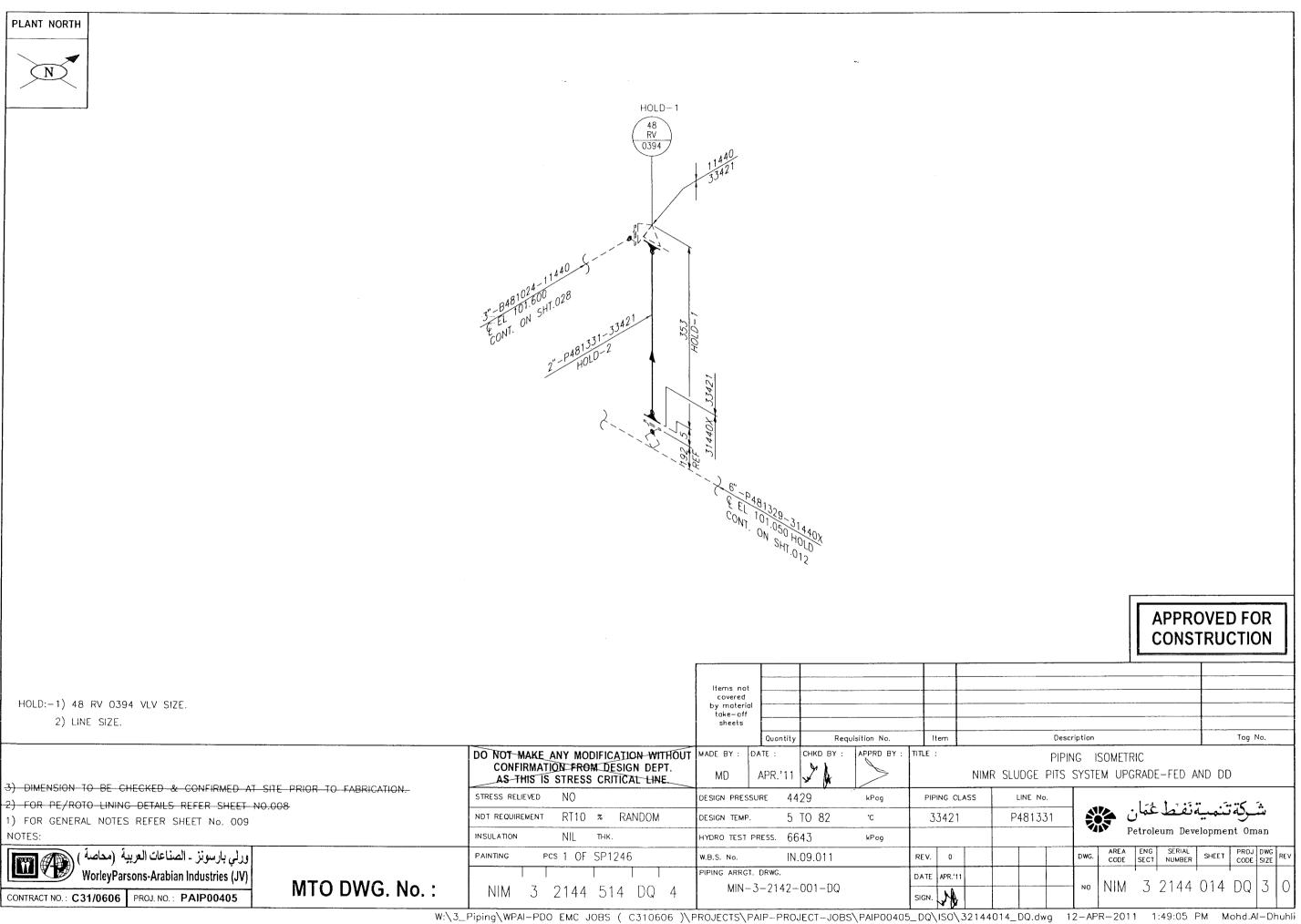
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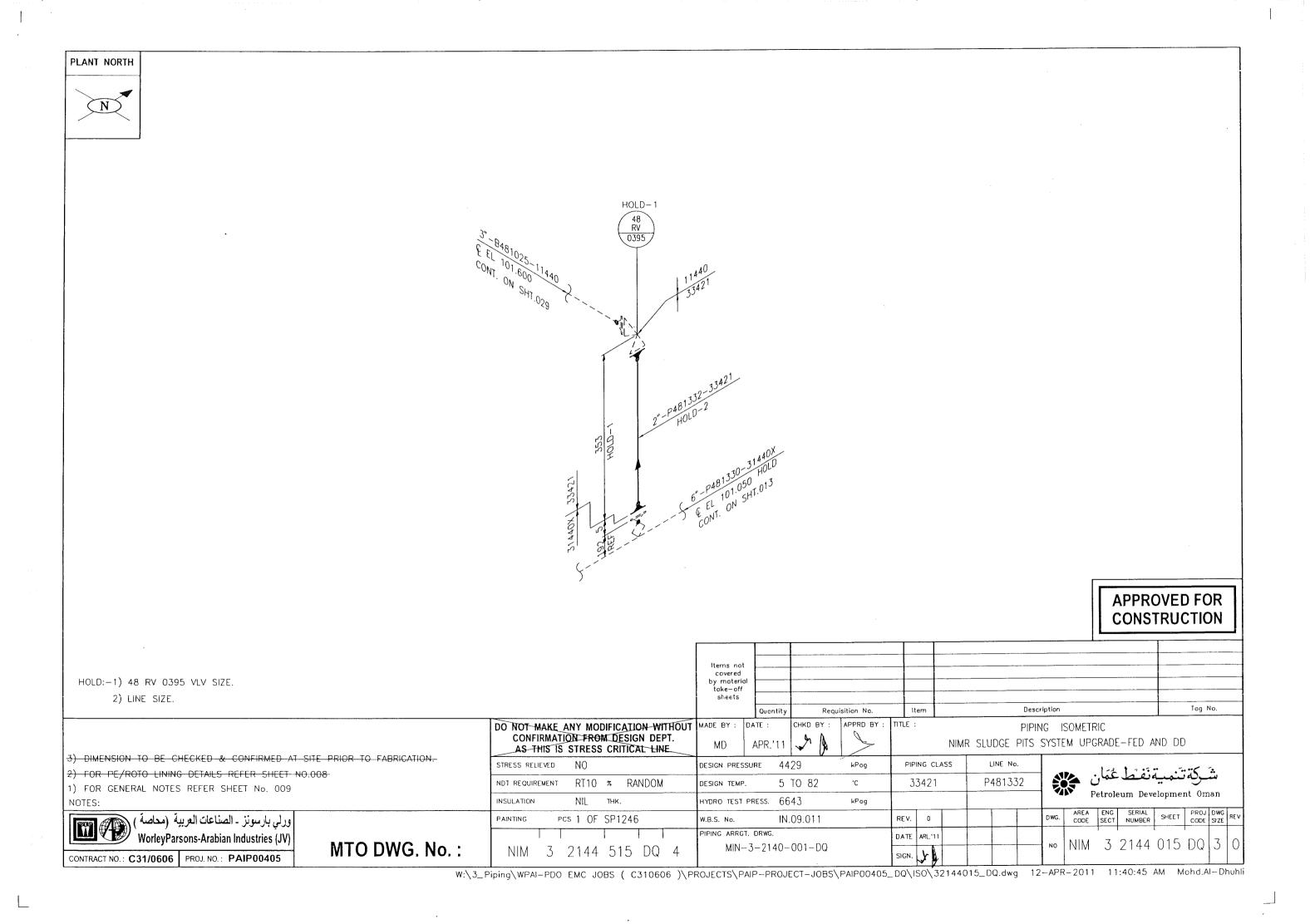


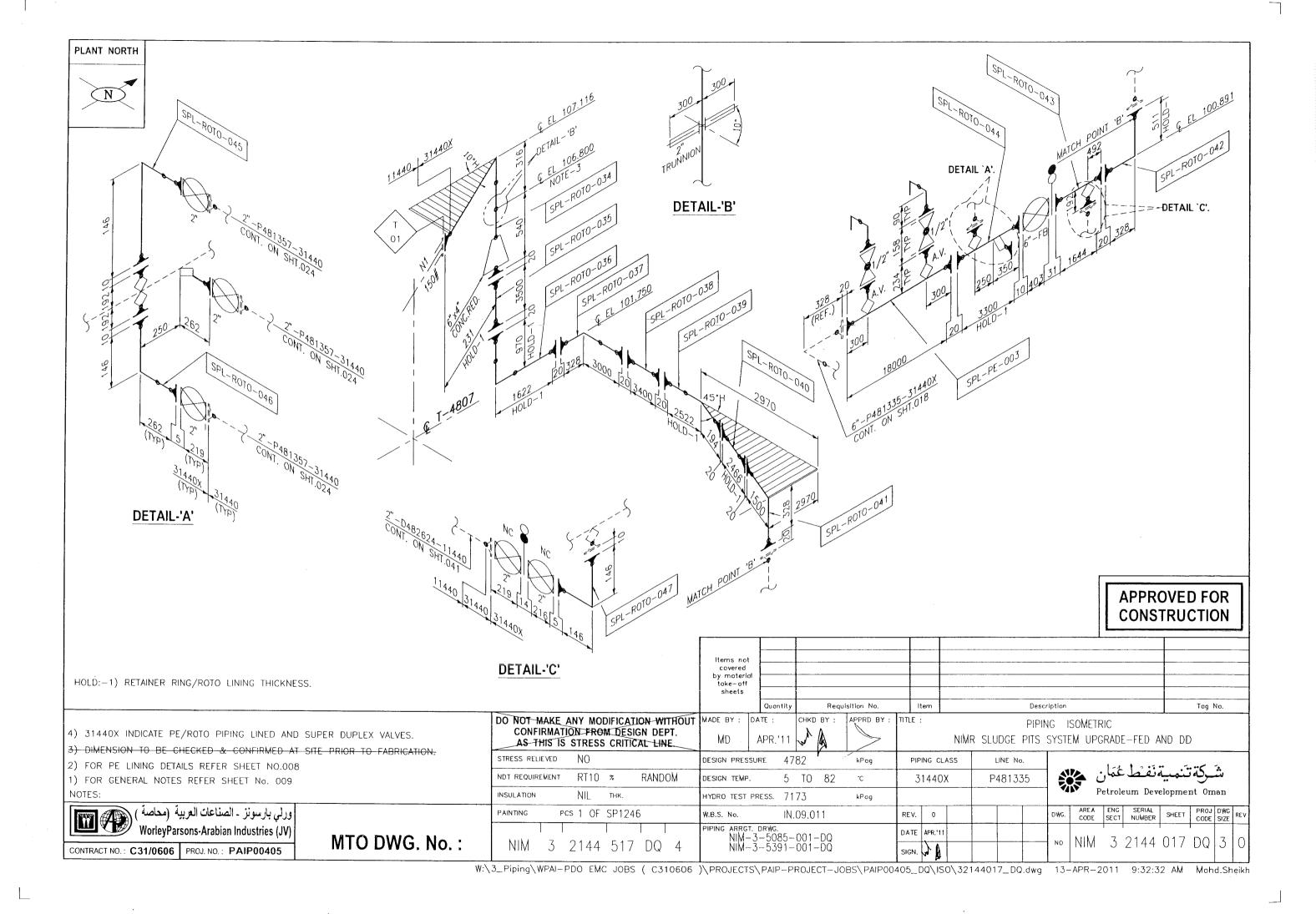


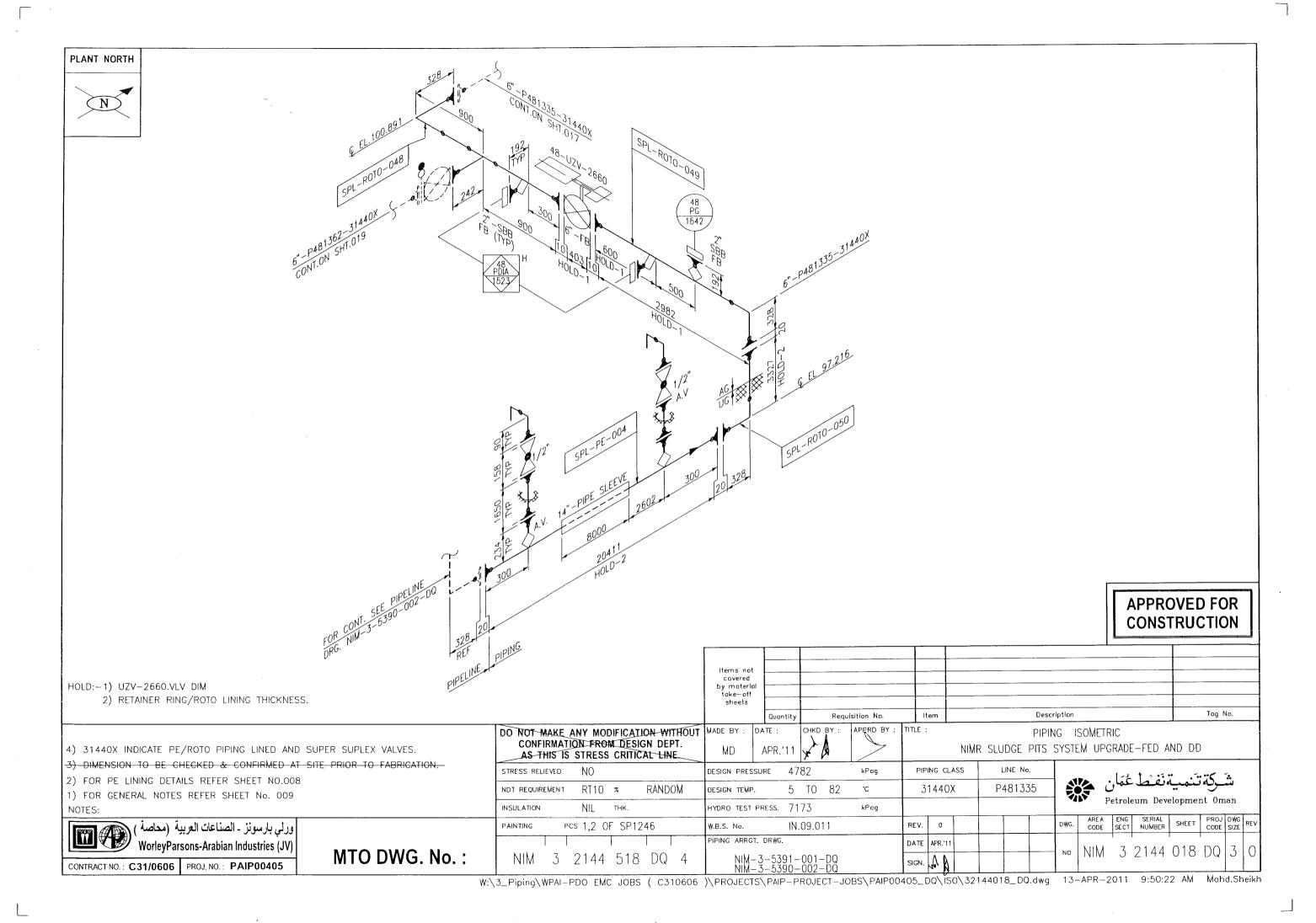


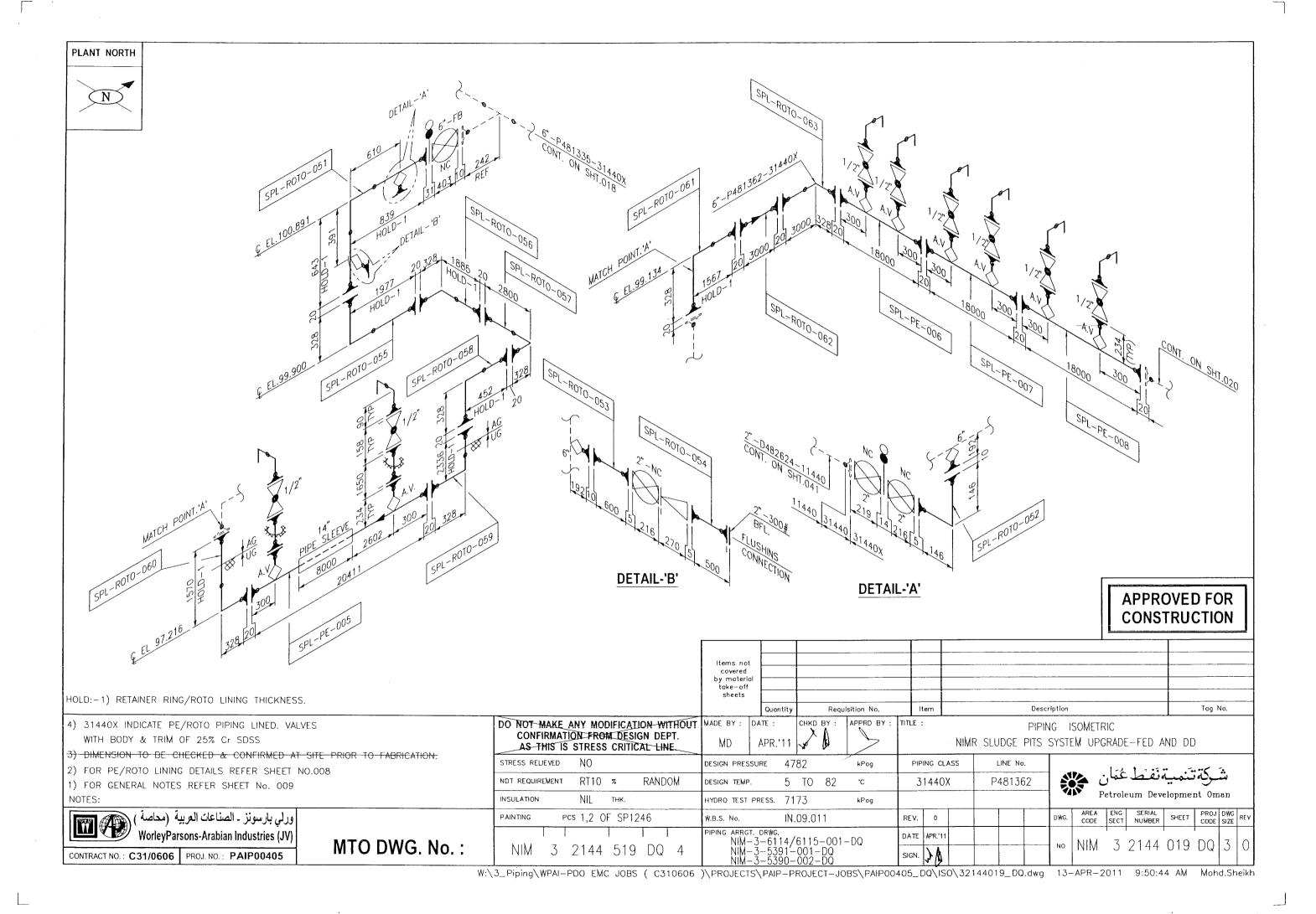


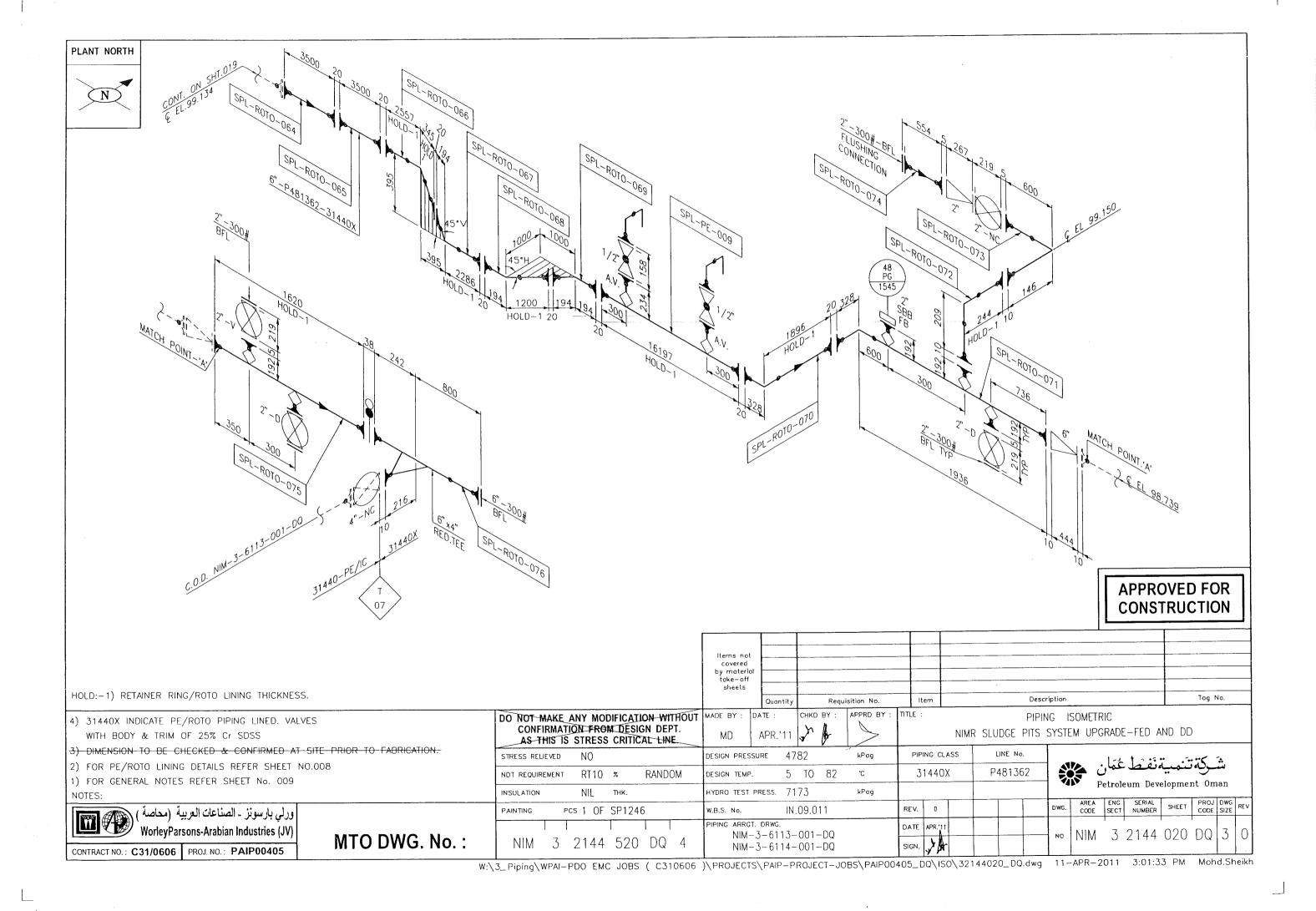


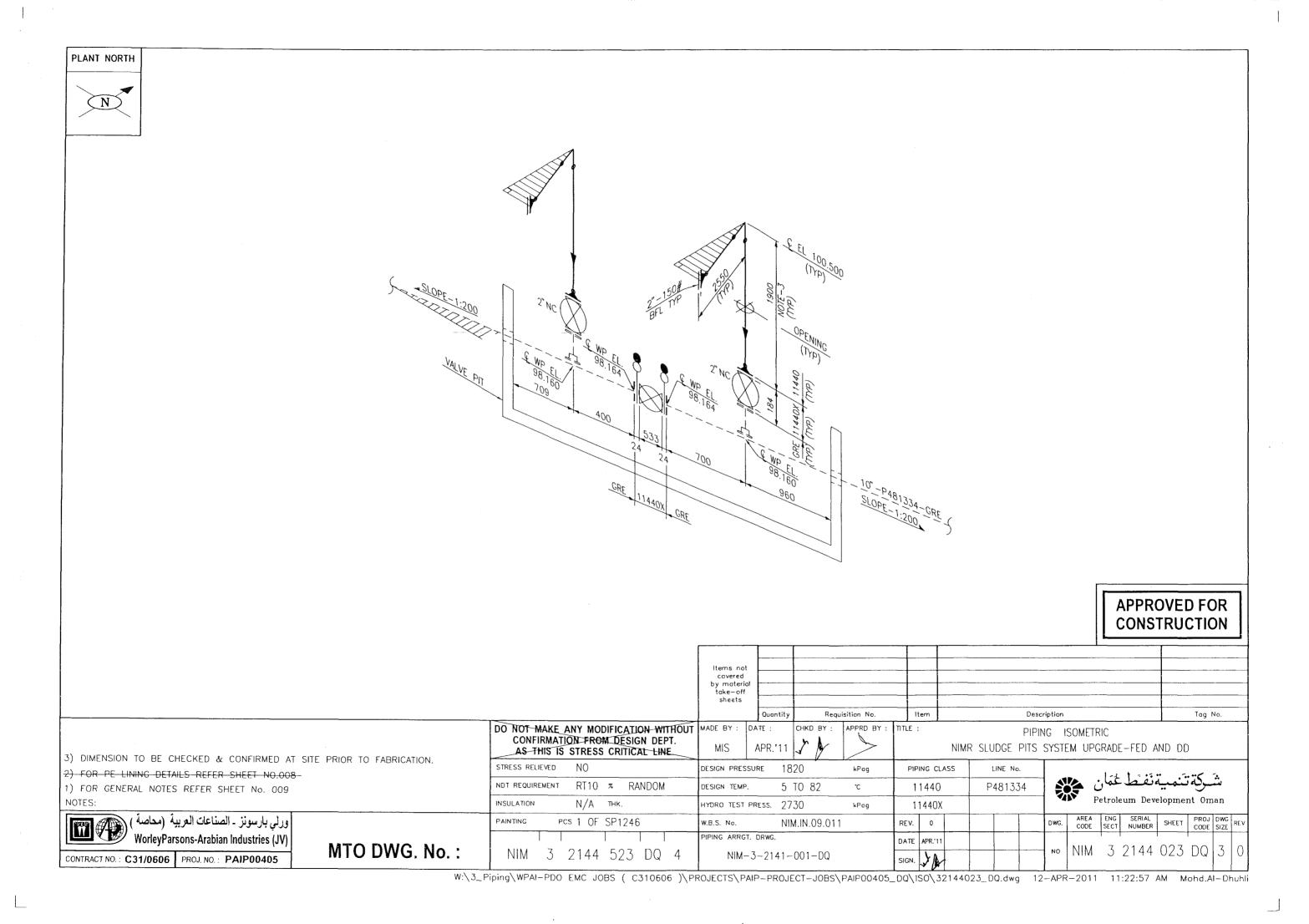


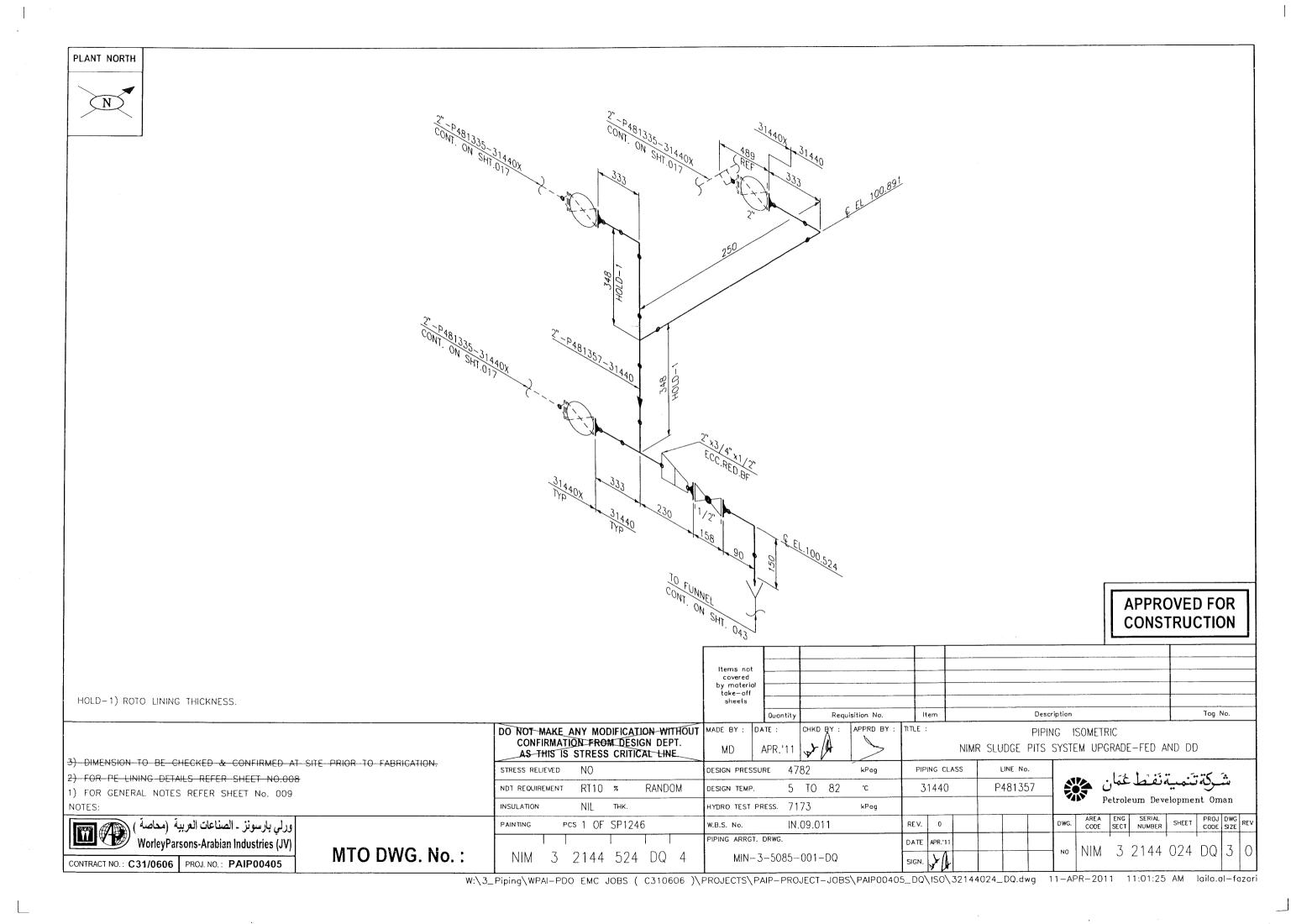


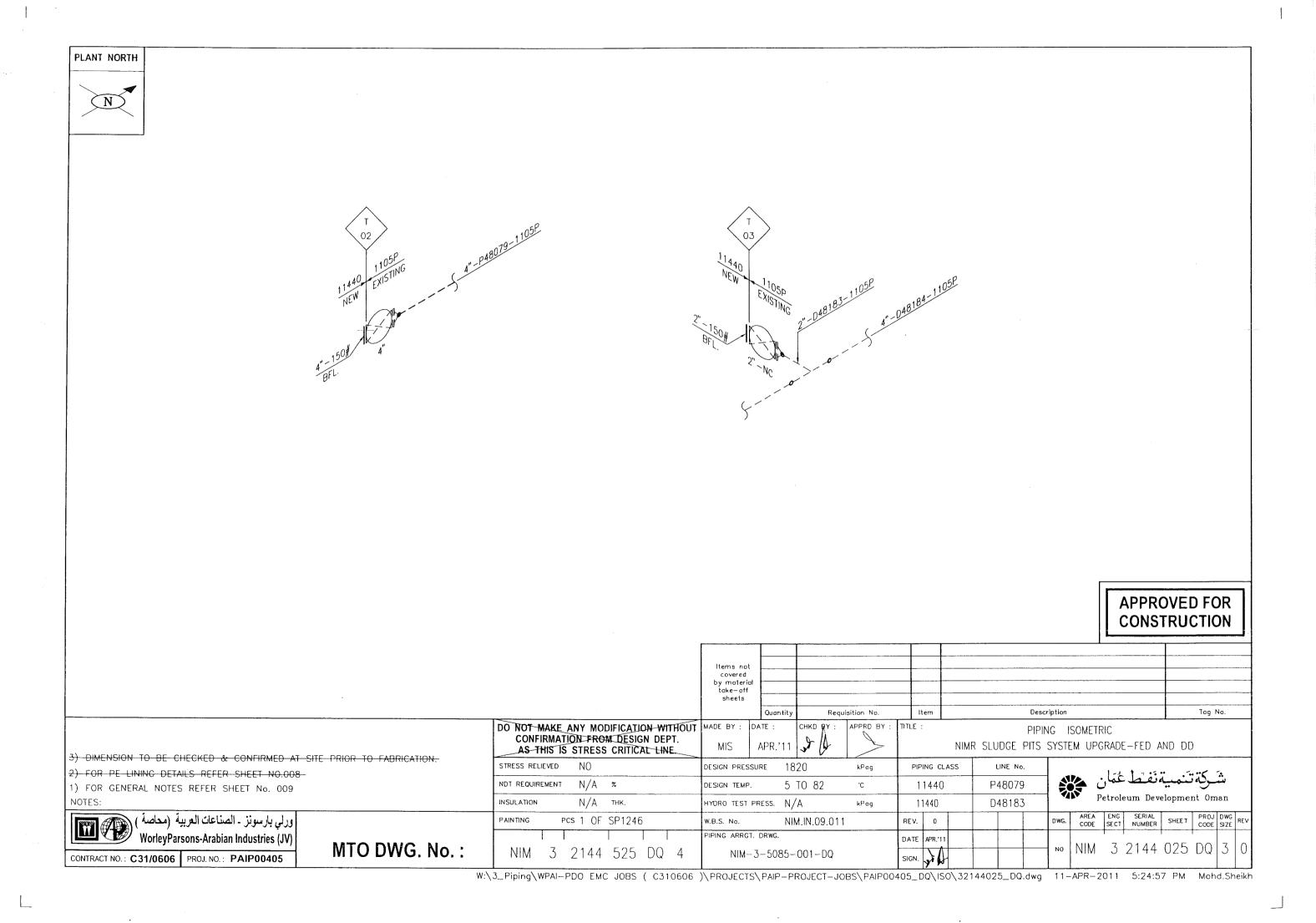


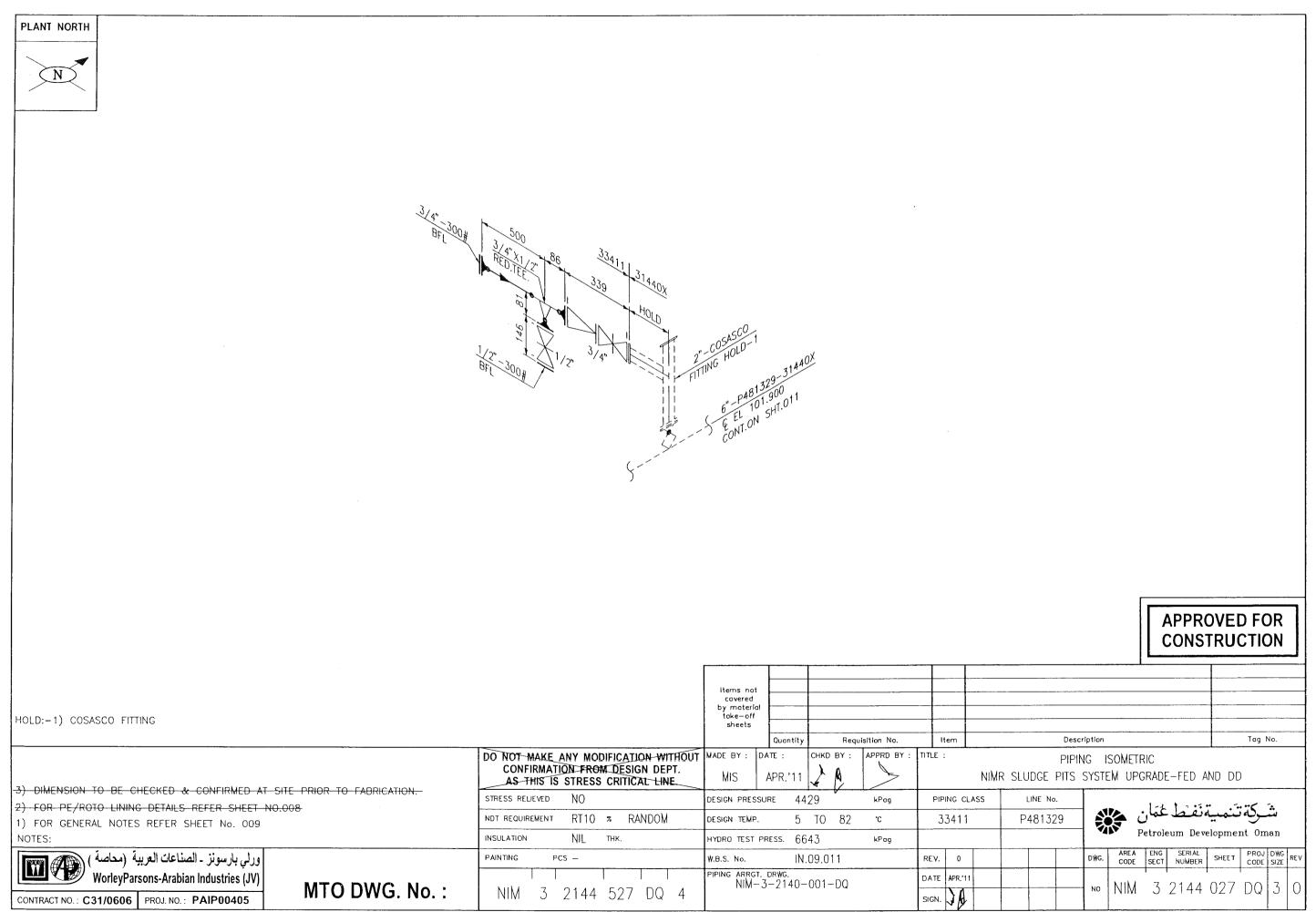


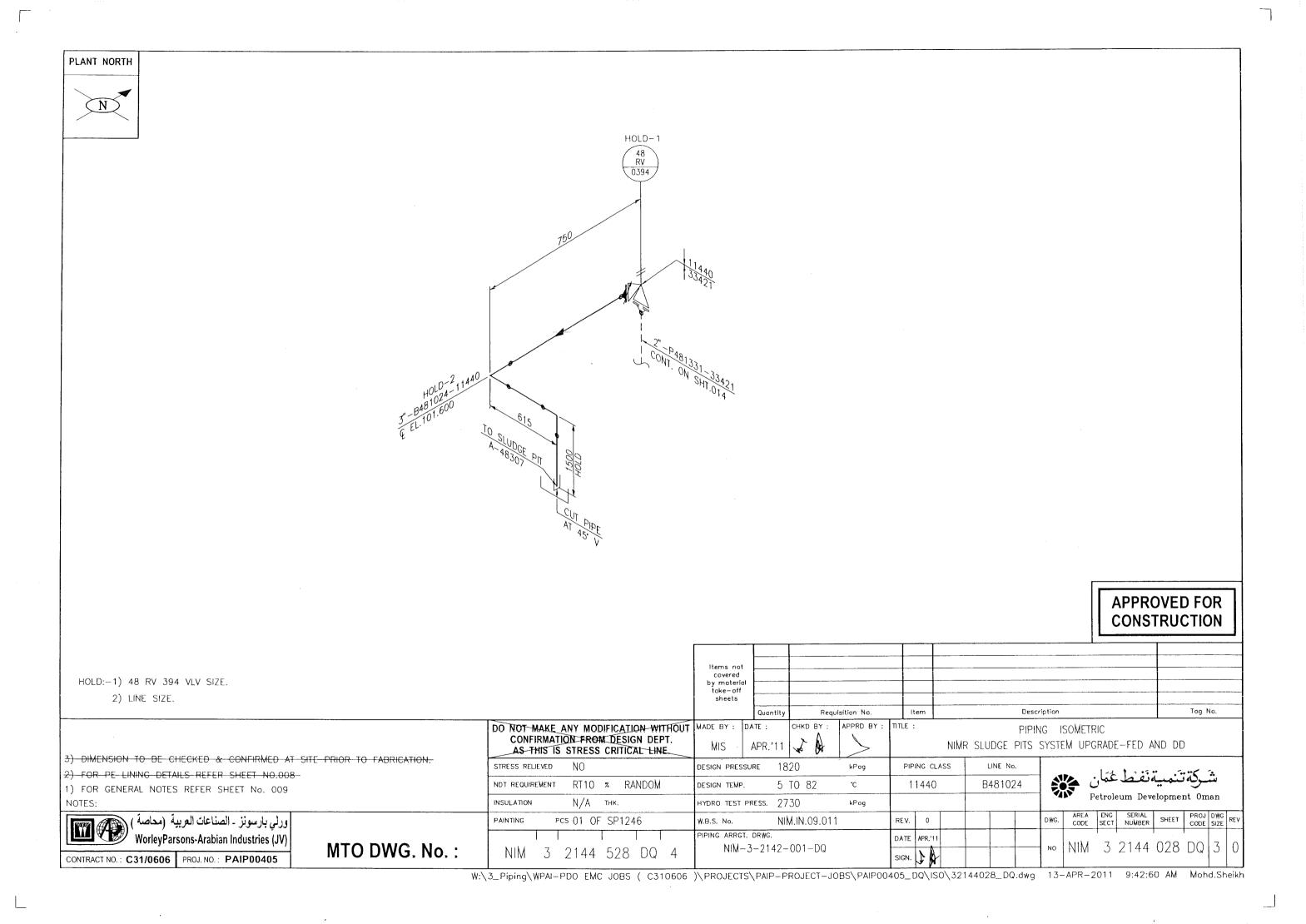




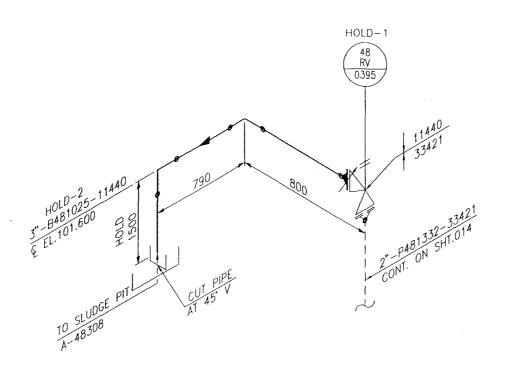






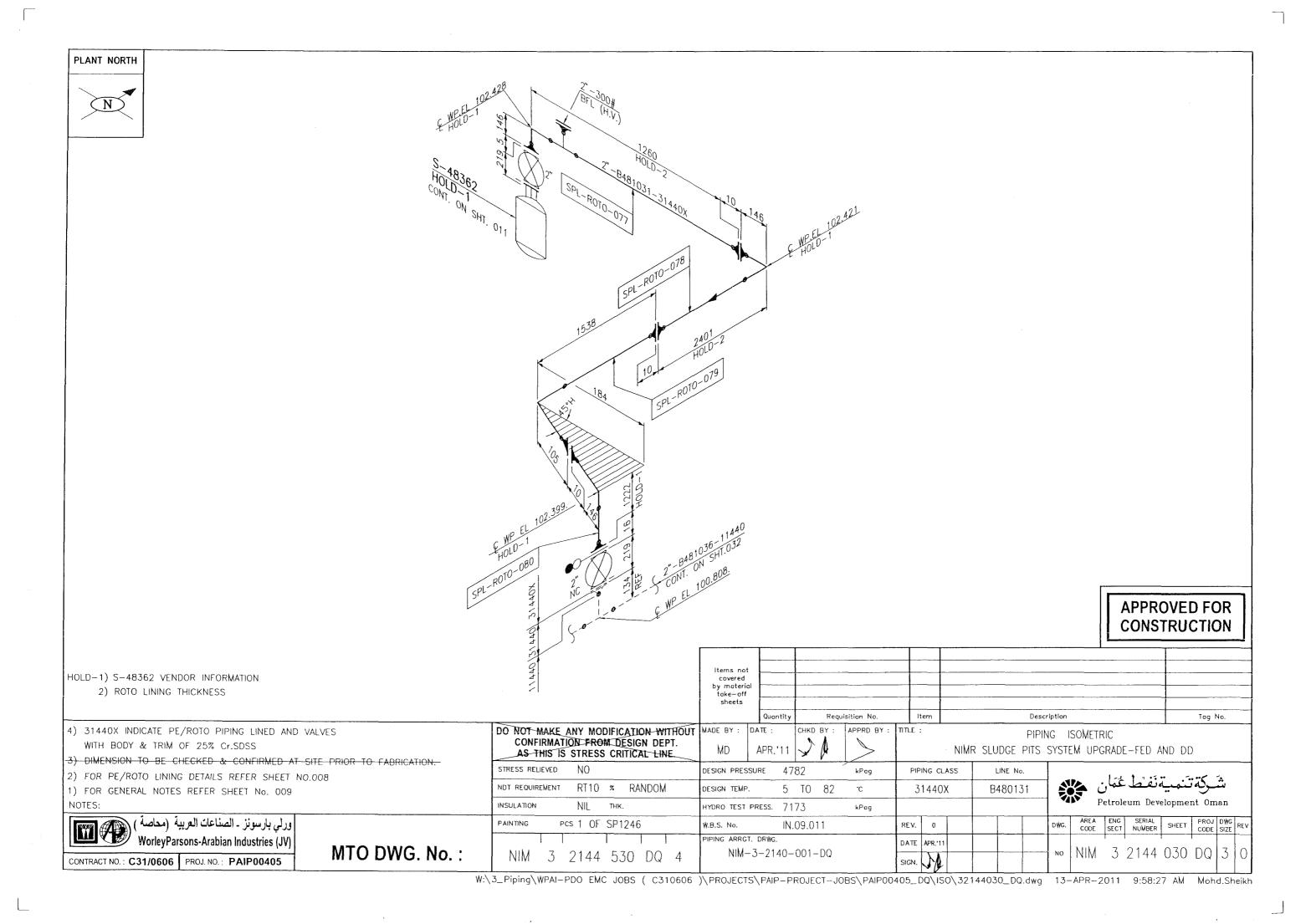


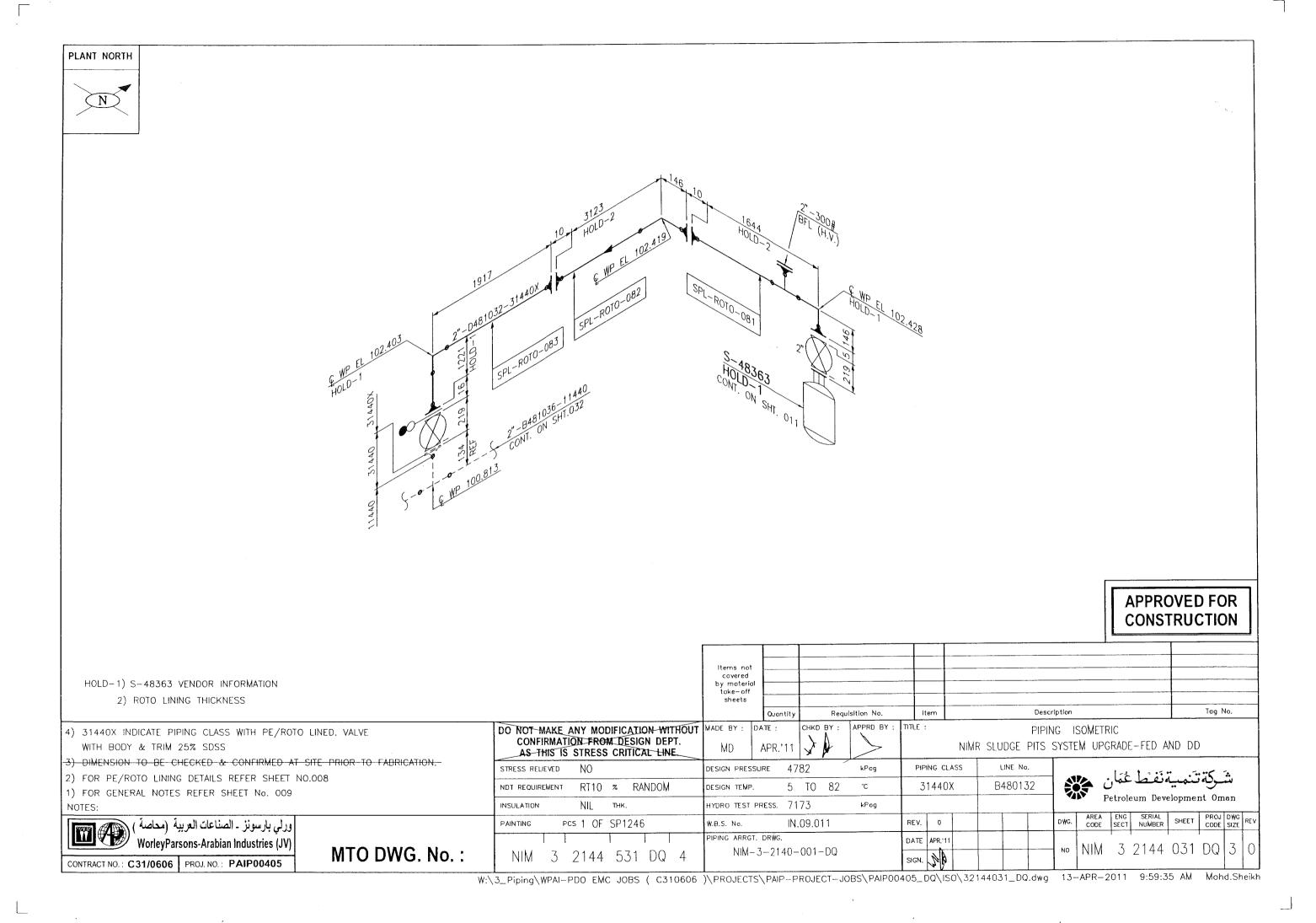


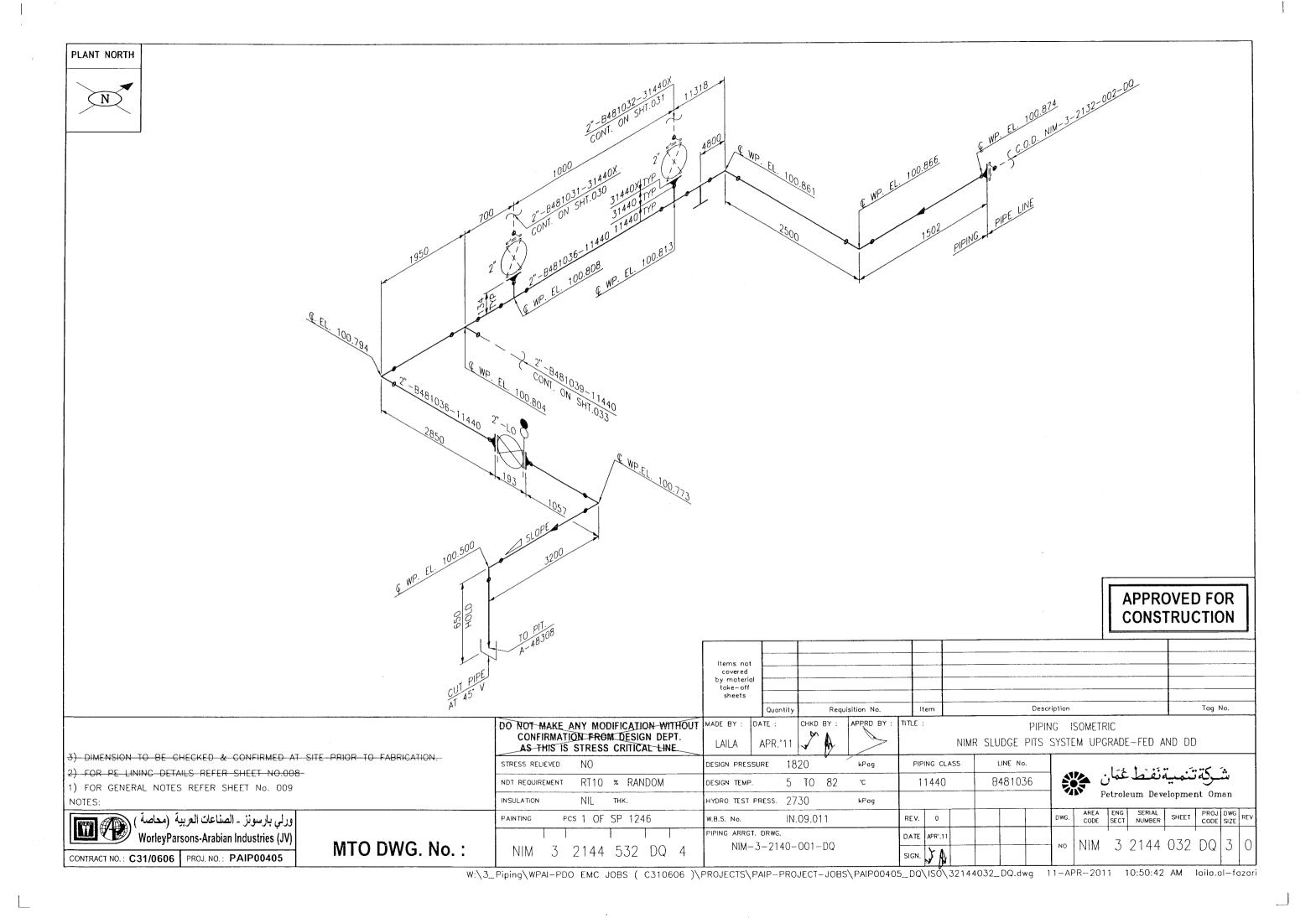


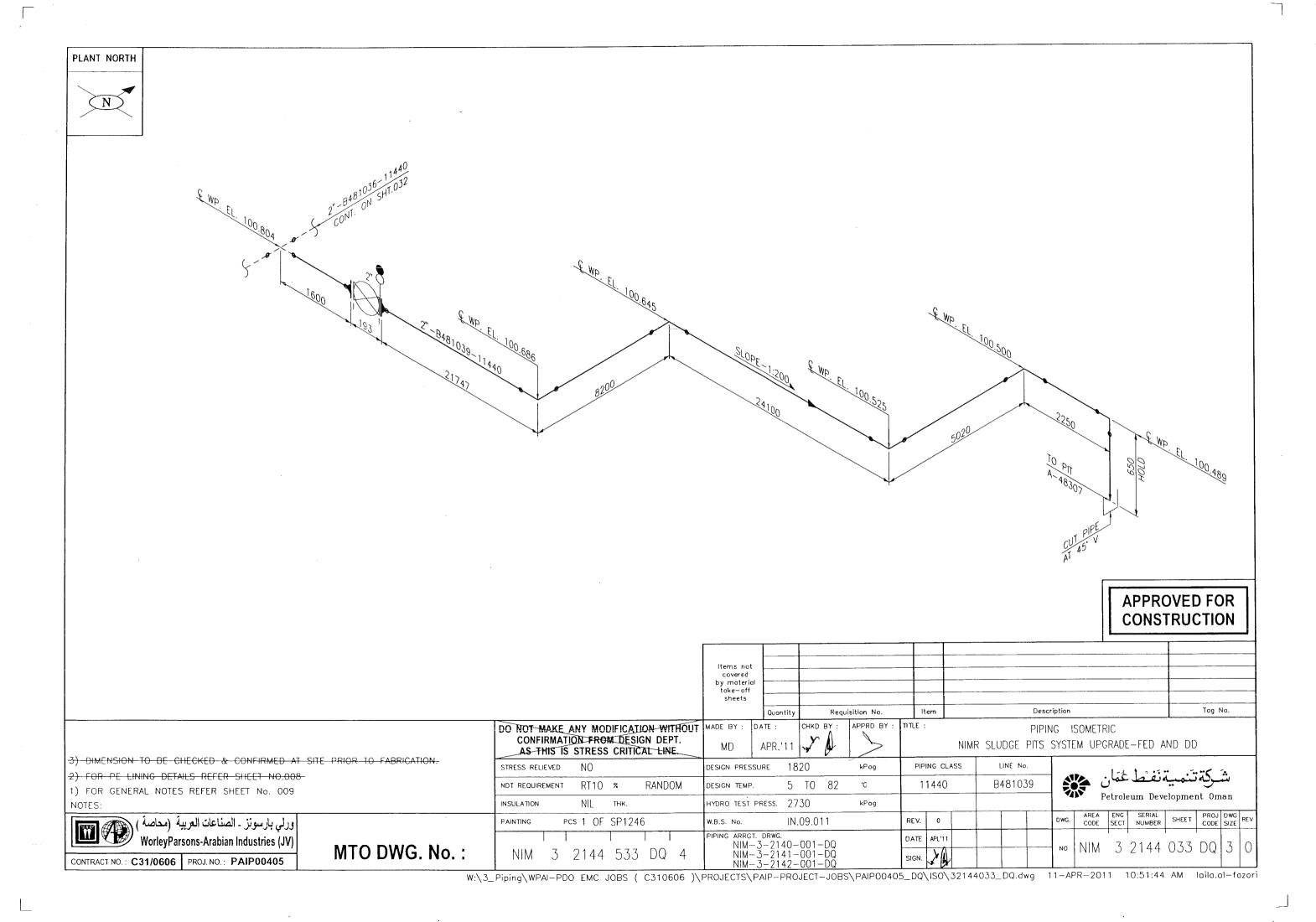
## APPROVED FOR CONSTRUCTION

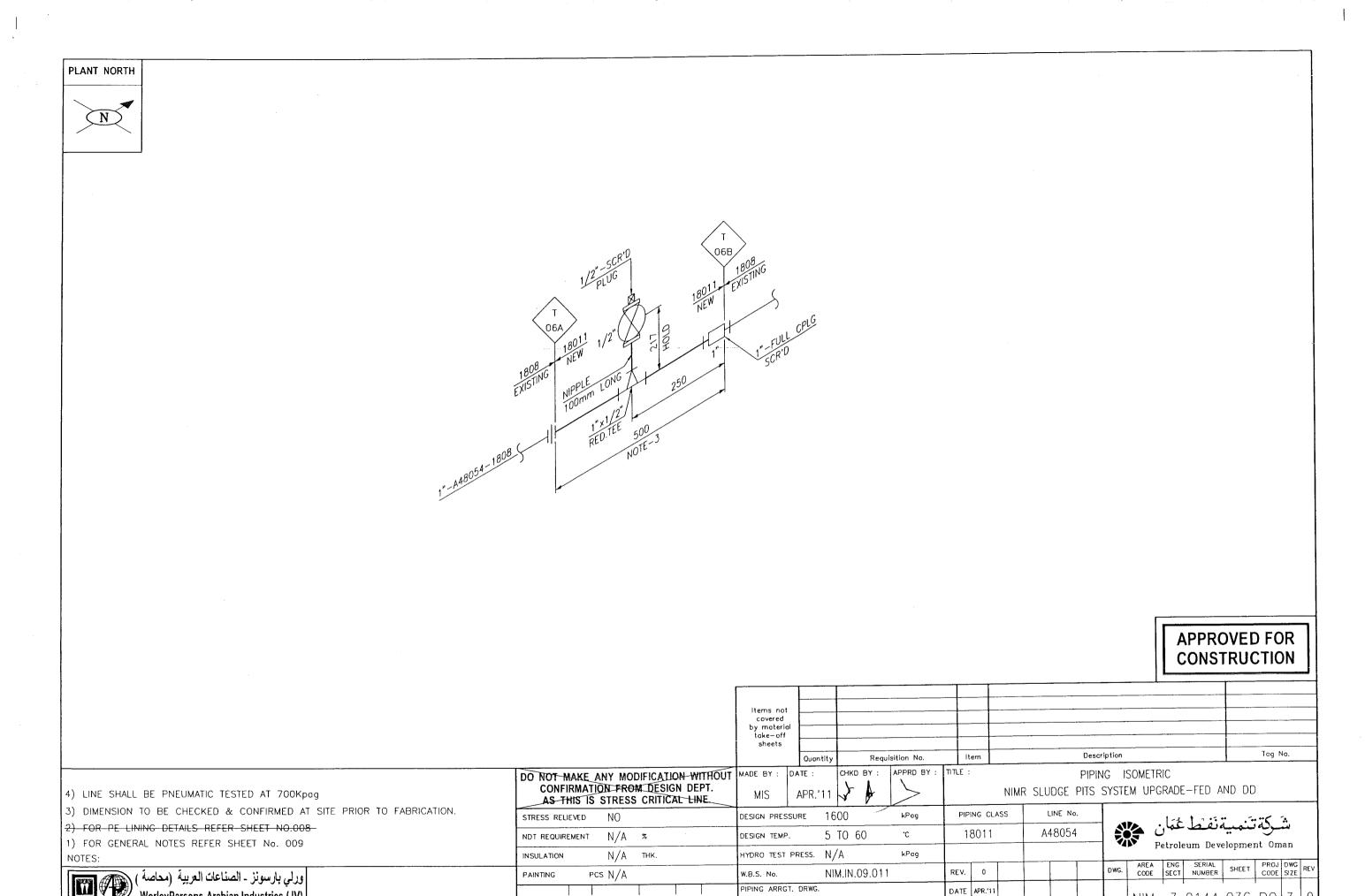
Items not covered by material HOLD:-1) 48 RV 395 VLV SIZ. toke-off 2) LINE SIZE. Requisition No. Tag No. Description DO NOT MAKE ANY MODIFICATION WITHOUT CONFIRMATION FROM DESIGN DEPT. MADE BY : DATE : CHKD BY : TITLE : PIPING ISOMETRIC NIMR SLUDGE PITS SYSTEM UPGRADE-FED AND DD APR.'11 AS THIS IS STRESS CRITICAL LINE. 3) DIMENSION TO BE CHECKED & CONFIRMED AT SITE PRIOR TO FABRICATION. STRESS RELIEVED DESIGN PRESSURE PIPING CLASS 2) FOR PE LINING DETAILS REFER SHEET NO.008 RT10 % RANDOM NDT REQUIREMENT DESIGN TEMP. 5 TO 82 11440 B481025 1) FOR GENERAL NOTES REFER SHEET No. 009 Petroleum Development Oman NOTES: N/A THK. HYDRO TEST PRESS. 2730 kPag PCS 01 OF SP1246 NIM.IN.09.011 REV. 0 PIPING ARRGT. DRWG. WorleyParsons-Arabian Industries (JV) DATE APR.'1 MTO DWG. No.: NO NIM 3 2144 029 DQ 3 0 NIM-3-2140-001-DQ NIM 3 2144 529 DQ 4 CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405











NIM 3 2144 536 DQ 4

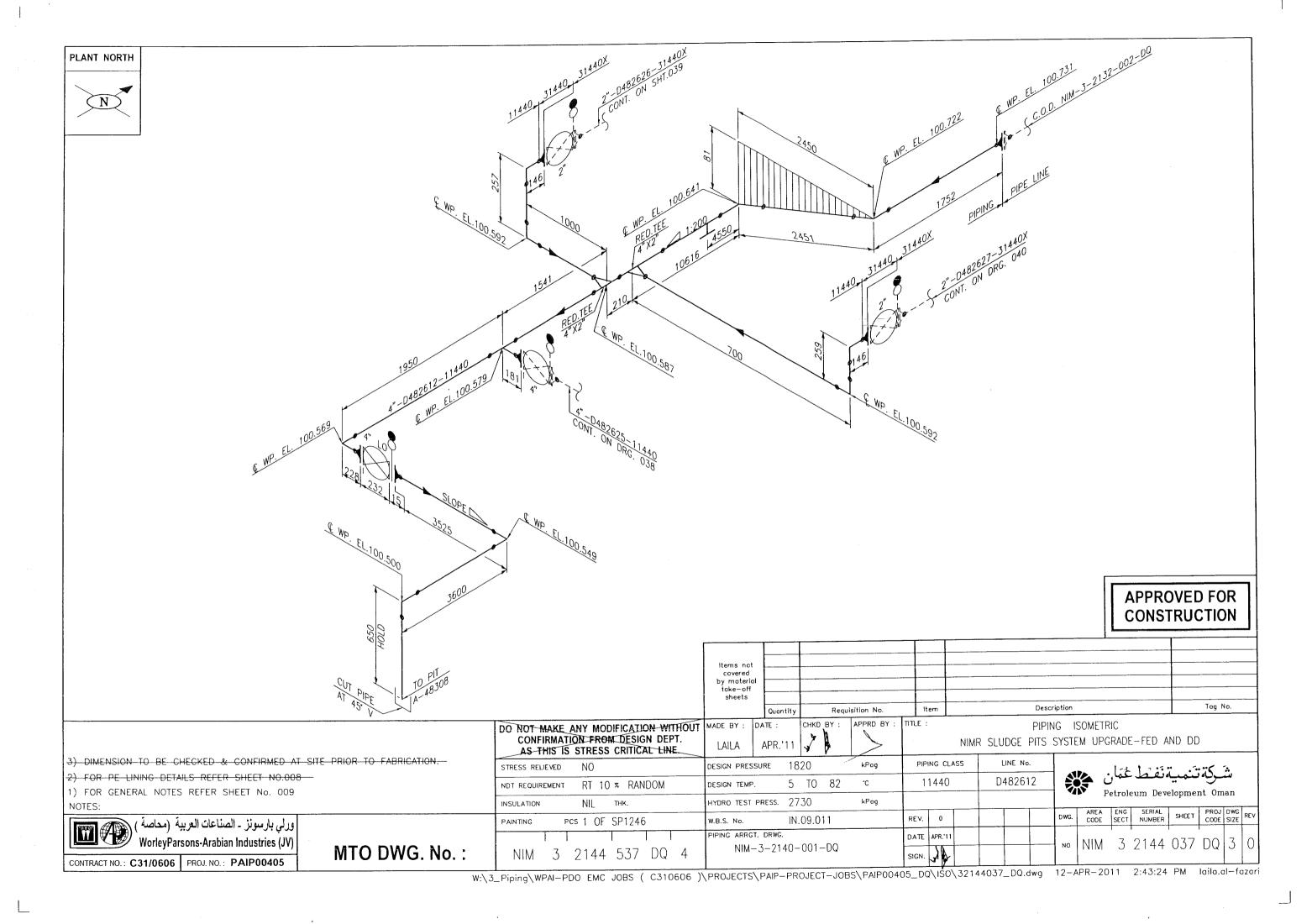
MTO DWG. No.:

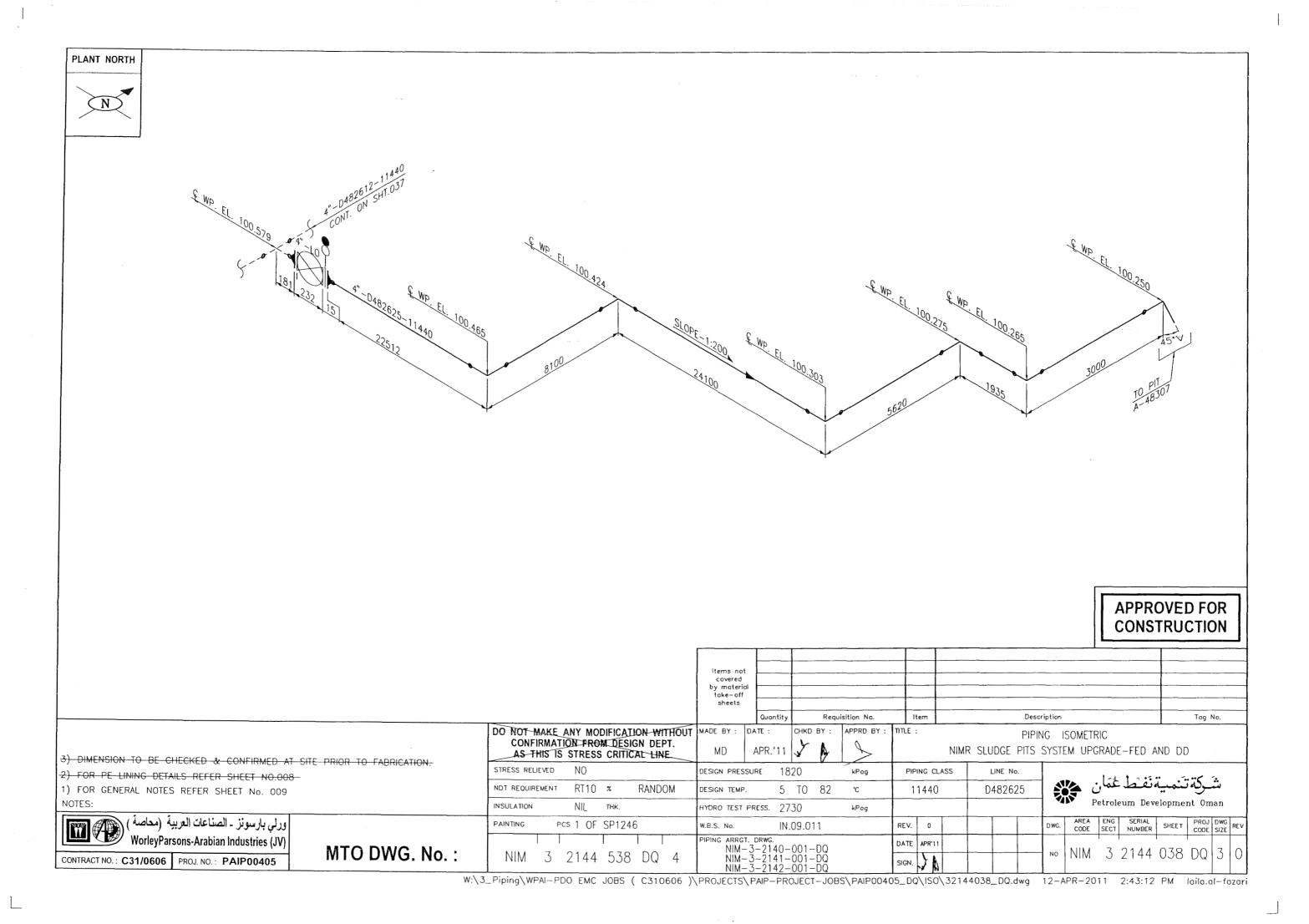
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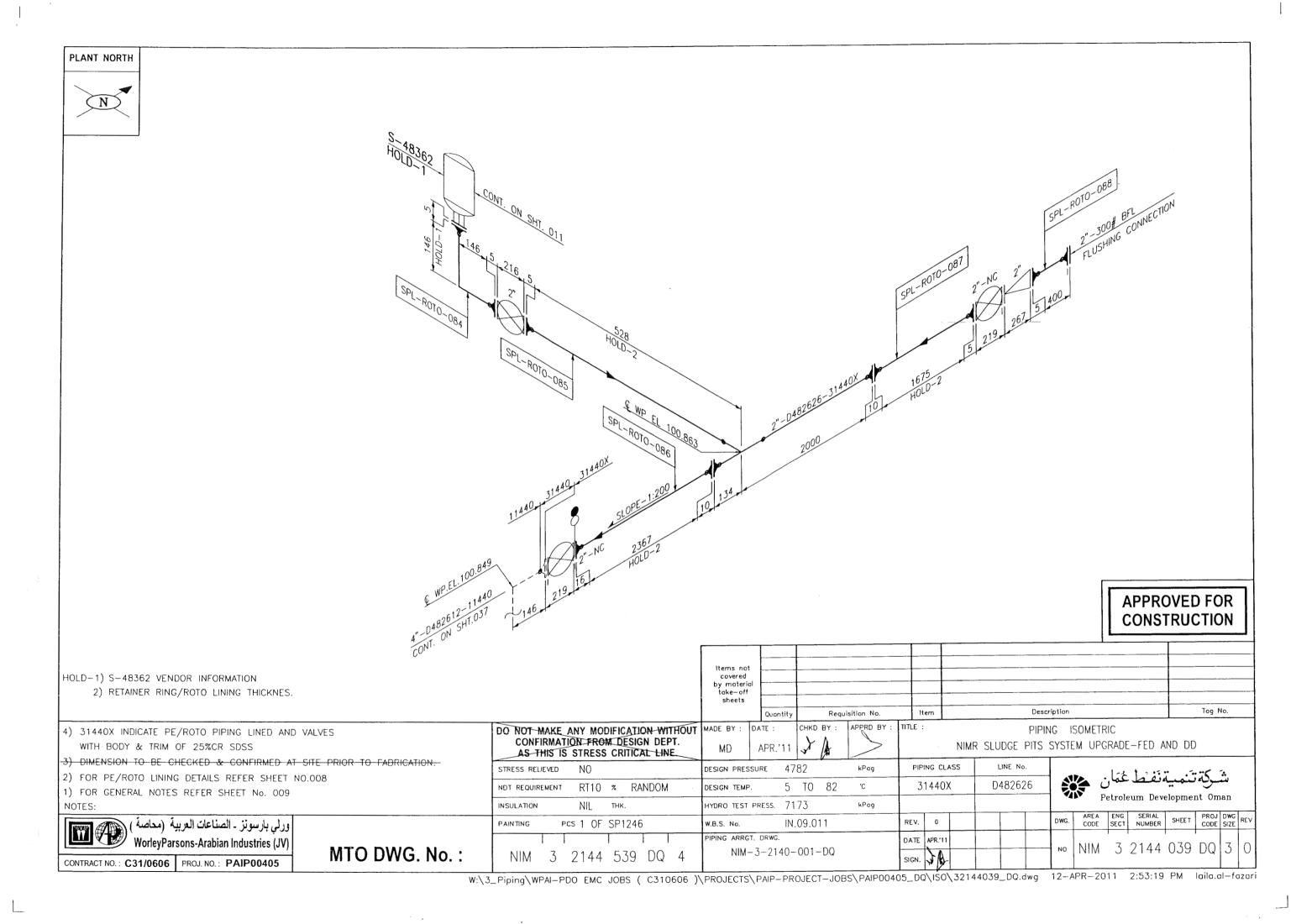
CONTRACT NO.: C31/0606 | PROJ. NO.: PAIP00405

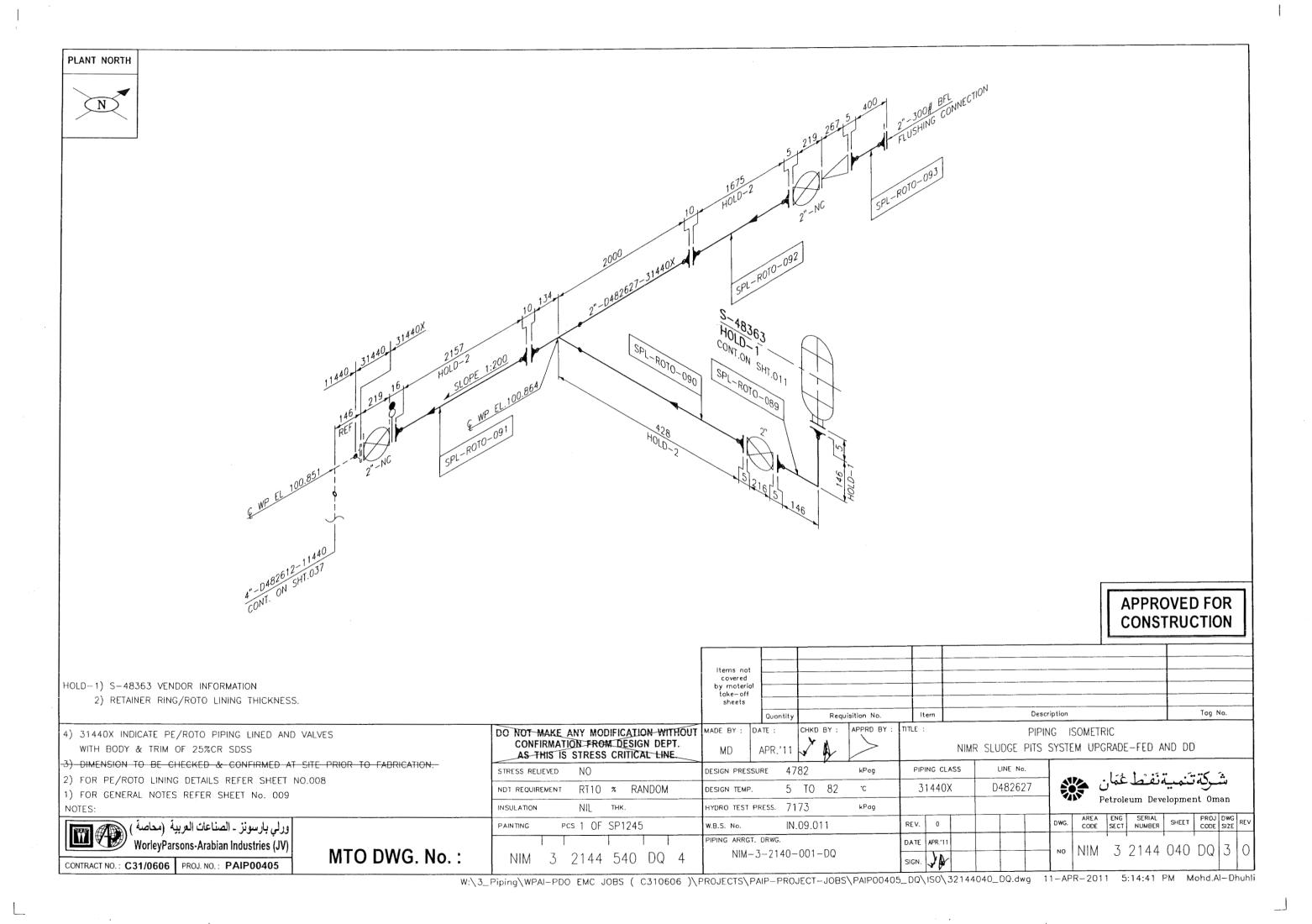
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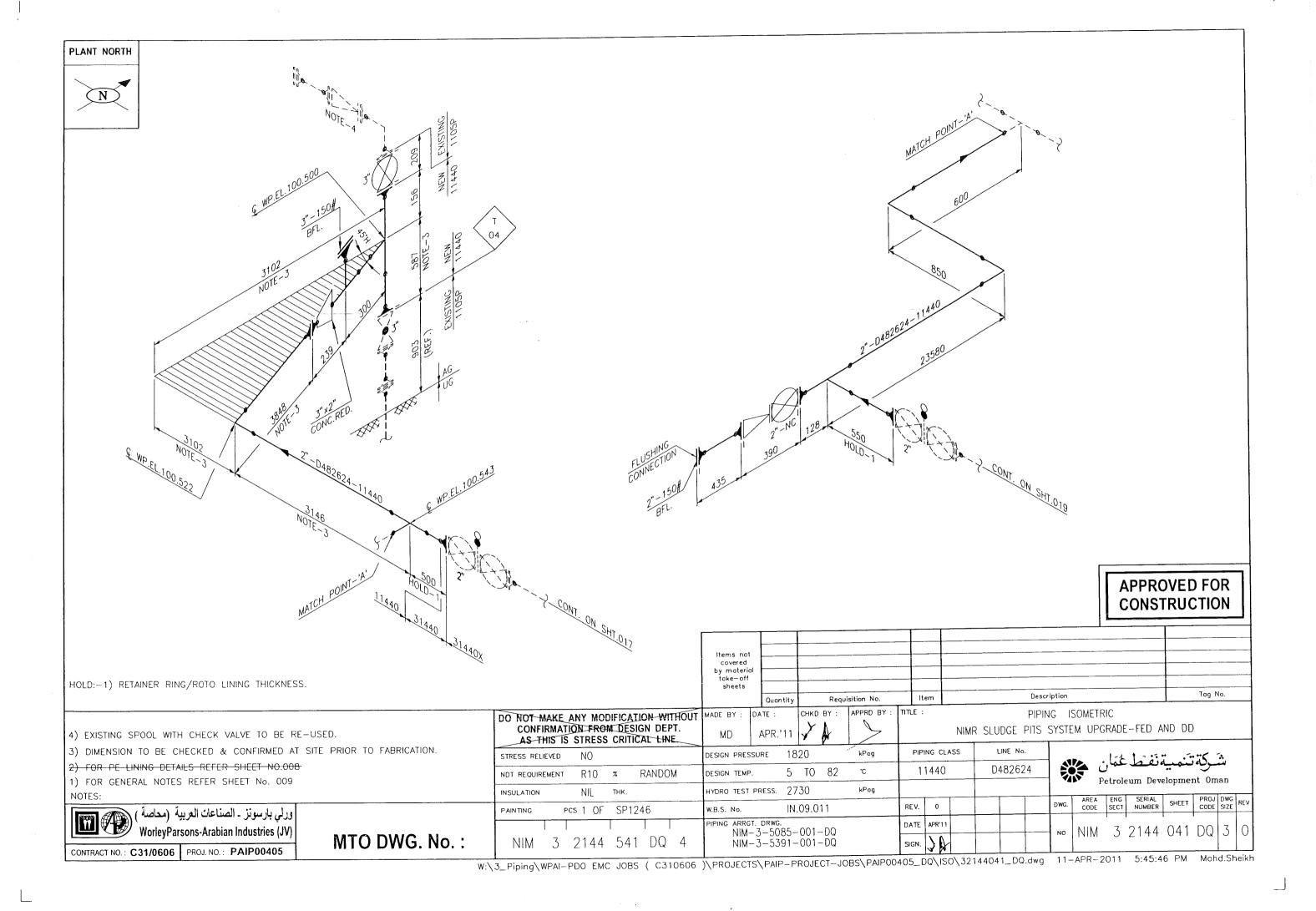
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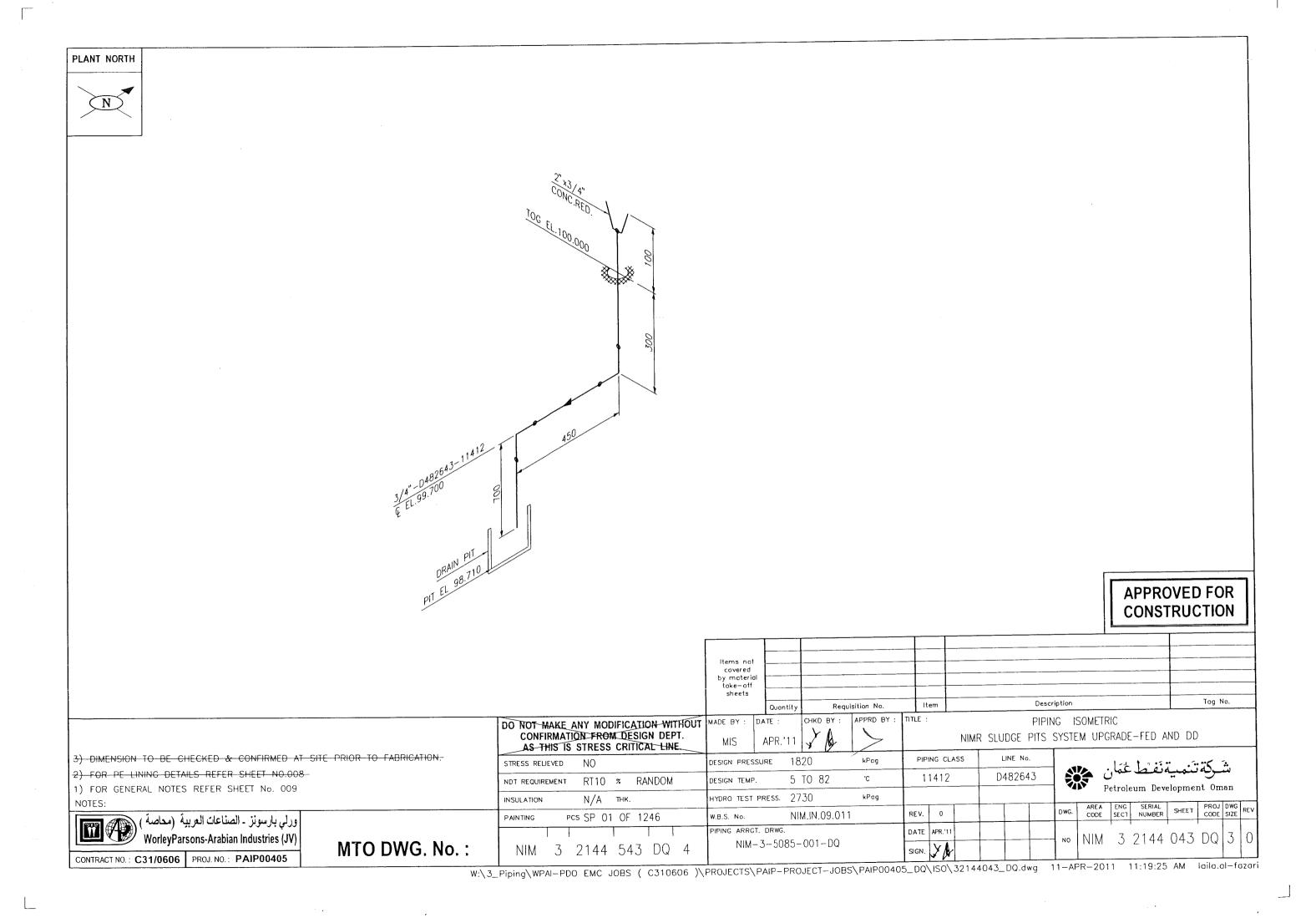














: Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Area

Job No.

WBS No

Proj. Code: DQ

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: P481329

Isometric Dwg No.: NIM-3-2144-011-DQ-3

Isowise MTO No. : NIM-3-2144-511-DQ-4

MTO Rev. No.

: 0

	MATERIAL FOR FABRICATION													
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2		Material	Sch,/WT	Rating	Tag No.				
1	23.5	74.30,03.211.1	31440X	150		Pipe	ASTM A106-B	S 40						
2	7	76.30.42.665.1	31440X	150		Elbow 90 Deg Bw	ASTM A234-WPB	S 40						
3	3	76.30.81.665.1	31440X	150		Equal Tee Bw	ASTM A234-WPB	S 40						
4	8	76.79.01.064.1	31440X	150	50	Branch Outlet Bw	ASTM A105	S 40 x S 80						
5	29	76.62,78.566.1	31440X	150		Weld Neck Rf Flange	ASTM A105	S 40	300#					
6	8	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#					

#### **MATERIAL FOR ERECTION**

	MATERIAL FOR ERECTION													
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.				
7	1	76.62.20.320.1	31440X	50		Lap Joint Flange	ASTM A105		300#					
8	4	76.88.37.056.1	31440X	150		Spectacle Blind	ASTM A516-60/65/70		300#					
9	1	76.83.38.562.1	31440X	50	255	Thermowell	ASTM B564 UNS N04400		150# / 2500#					
10	4	85.41.36.374.1	31440X	150		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#					
11	8	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#					
12	5	NON MESC	31440X	150	į	Ball Valve 14313 FB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#					
13	1	BY INST	300#	150		Flow Meter		i	300#					
14	2	NON MESC	31440X	50		Chemical Injection Quill	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	CHEMICAL INJ.				
15	2	NON MESC	31440X	150		Basket Strainer	Body: ASTM A105/A216- WCB/WCC Internal glass flake coating Trim: 25% Cr Duplex		300#					
16	16	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM							
17	216	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM							
18	48	81.38.66.340.1	31440X	.75	170	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM							
19	48	81.38.66.278.1	31440X	.625	130	Stud Bolt With Nuts - Temp Inst	ASTM A193-B7M/A194-2HM							
20	5	NON MESC	31440X	50	50	Modular Constr. SBBV	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#					

Prepared by

Checked by

Approved by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



: Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Area Job No.

Proj. Code: DQ

: NIMR

: PAIP00405

Station:

Line Number

: P481329

Isometric Dwg No.: NIM-3-2144-012-DQ-3

Isowise MTO No. : NIM-3-2144-512-DQ-4

WBS No : NIM.IN.09.011 MTO Rev. No.

	MATERIAL FOR FABRICATION													
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.				
1	1.5	74.30.03.071.1	31440X	50		Pipe	ASTM A106-B	S 80						
2	64.5	74.30.03.211.1	31440X	150		Pipe	ASTM A106-B	S 40						
3	8	76.30.42.572.1	31440X	15		Elbow 90 Deg Bw	ASTM A234-WPB	S 160						
4	1	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80	-					
5	5	76.30.42.665.1	31440X	150		Elbow 90 Deg Bw	ASTM A234-WPB	S 40						
6	4	76.79.01.064.1	31440X	150	50	Branch Outlet Bw	ASTM A105	S 40 x S 80						
7	4	76.80.37.121.1	31440X	600	15	Branch Fitting Flgd	ASTM A105	S 160	300#					
8	30	76.62.78.566.1	_31440X	150		Weld Neck Rf Flange	ASTM A105	S-40	300#					
9	8	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#					
10	4	76.62.78.652.1	31440X	15		Weld Neck Rf Flange	ASTM A105	S 160	300#					

#### **MATERIAL FOR ERECTION**

			••	1			-			
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
11	2	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105		300#	
12	8	85.41.36.404.1	31440X	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
13	3	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
14	2	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
15	1	NON MESC	31440X	150		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
16	4	77.30.05.353.1	31440X	15		Globe Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
17	1	NON MESC	31440X	50		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
18	1	NON MESC	31440X	150		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
19	32	81.38.66.155.1	31440X	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
20	204	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
21	72	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
22	12	81.38.66.340.1	31440X	.75	170	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
23	1	NON MESC	31440X	50	50	Modular Constr. SBBV	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	

Prepared by

Checked by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

Job No.

WBS No

Proj. Code : DQ

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

: NIMR

: NIM.IN.09.011

: PAIP00405 Station: Line Number

: P481330

Isometric Dwg No.: NIM-3-2144-013-DQ-3

Isowise MTO No. : NIM-3-2144-513-DQ-4

MTO Rev. No.

: 0

MATERIAL FOR FABRICATION													
Sch./WT Rating Tag No.													
S 40													
S 40													
S 40 x S 80													
S 40 300#													
S 80 300#													

#### MATERIAL FOR ERECTION

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
6	1	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105		300#	errore than
7	1	76.88.37.056.1	31440X	150		Spectacle Blind	ASTM A516-60/65/70		300#	
8	2	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
9	1	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
10	1	NON MESC	31440X	150		Ball Valve 14313 FB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
11	1	NON MESC	31440X	150		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
12	32	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
13	96	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
14	12	81.38.66.340.1	31440X	.75	170	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
15	1	NON MESC	31440X	50	50	Modular Constr. SBBV	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	

Prepared by 👍

Checked by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.

APPROVED FOR CONSTRUCTION

Report printed on: April 12, 2011 5:29 PM



Job Title

· Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

Proj. Code: DQ

: NIMR

: PAIP00405

Station:

Line Number

: P481331

Isometric Dwg No.: NIM-3-2144-014-DQ-3

Isowise MTO No. : NIM-3-2144-514-DQ-4

: NIM.IN.09.011 WBS No

MTO Rev. No.

	MATERIAL FOR FABRICATION													
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.				
1	.5	74.36.33.057.1	33421	50	F	Pipe	ASTM A312-TP316L	S10S						
2	2	76.65.79.410.1	33421	50	ν	Veld Neck Rf Flange	ASTM A182-F316	S10S	300#					
				I	MATERI	AL FOR ERECTION		<del> </del>	l					

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
3	1	85.41.36.414.1	33421	50		1	AISI 316, graphite filled CS centring-/SS inner ring		300#	
4	8	81.38.66.278.1	33421	.625	130	Stud Bolt With Nuts - Meter Run	ASTM A193-B7M/A194-2HM			

Prepared by

Checked by &

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Proj. Code: DQ

### **Isowise Material Take Off**

; Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Area Job No.

WBS No

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: P481331

Isometric Dwg No.: NIM-3-2144-015-DQ-3

Isowise MTO No. : NIM-3-2144-515-DQ-4

MTO Rev. No.

MESC Number	Class	Size 1 Size 2	Description	**-4		4	7
1		0,22	Description	Material	Sch./WT	Rating	Tag No.
74.36.33.057.1	33421	50	Pipe	ASTM A312-TP316L	S10S		
76.65.79.410.1	33421	50	Weld Neck Rf Flange	ASTM A182-F316	S10S	300#	
			76.65.79.410.1 33421 50	76.65.79.410.1 33421 50 Weld Neck Rf Flange		76.65.79.410.1 33421 50 Weld Neck Rf Flange ASTM A182-F316 S10S	76.65.79.410.1 33421 50 Weld Neck Rf Flange ASTM A182-F316 S10S 300#

,										
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
3	1	85.41.36.414.1	33421	50		1	AISI 316, graphite filled CS		300#	
			ļ				centring-/SS inner ring			
4	8	81.38.66.278.1	33421	.625	130	Stud Bolt With Nuts -	ASTM A193-B7M/A194-2HM		)	
						Meter Run				

Prepared by

Checked by Land

Approved by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



: Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Area

: NIMR

Job No.

Proj. Code: DQ

: PAIP00405

Station:

Line Number : P481335

Isometric Dwg No.: NIM-3-2144-017-DQ-3

Isowise MTO No. : NIM-3-2144-517-DQ-4

MTO Rev. No. : O

WBS No : NIM.IN.09.011

				N	MATERIA	AL FOR FABRICAT	ION			
	Quantity	MESC Number	Class.	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	.5	74.30.03.071.1	31440X	50		Pipe	ASTM A106-B	S 80		
2	1	74.30.03.149.1	31440X	100		Pipe	ASTM A106-B	S 40		
3	42.5	74.30.03.211.1	31440X	150		Pipe	ASTM A106-B	S 40		
4	1	76.30.34.665.1	31440X	150		Elbow 45 Deg Bw	ASTM A234-WPB	S 40		
5	4	76.30.42.572.1	31440X	15		Elbow 90 Deg Bw	ASTM A234-WPB	S 160		
6 .	3	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80		
7	1	76.30.42.645.1	31440X	100		Elbow 90 Deg Bw	ASTM A234-WPB	S 40		
8	4	76.30.42.665.1	31440X	150		Elbow 90 Deg-Bw-	ASTM A234-WPB—	S 40		
9	1	76.30.66.305.1	31440X	150	100	Reducer Conc.Bw	ASTM A234-WPB	S 40 x S 40		
10	4	76.79.01.064.1	31440X	150	50	Branch Outlet Bw	ASTM A105	S 40 x S 80		
11	2	76.80.37.121.1	31440X	600	15	Branch Fitting Flgd	ASTM A105	S 160	300#	
12	1	76.62.78.314.1	11440	100		Weld Neck Rf Flange	ASTM A105	\$40	150#	
13	23	76.62.78.566.1	31440X	150		Weld Neck Rf Flange	ASTM A105	S 40	300#	
14	9	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#	
15	2	76.62.78.652.1	31440X	15		Weld Neck Rf Flange	ASTM A105	S 160	300#	
					MATER	RIAL FOR ERECTION	ON		·	
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	5ch/WT	Rating	Tag No.

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
16	1	76.88.37.050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70		300#	
17	1	76.88.37.056.1	31440X	150		Spectacle Blind	ASTM A516-60/65/70		300#	
18	1	85.41.36.374.1	31440X	150		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
19	4	85.41.36.404.1	31440X	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
20	2	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
21	5	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
22	1	NON MESC	31440X	150		Ball Valve 14313 FB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
23	2	77.30.05.353.1	31440X	15		Globe Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
24	16	81.38.66.155.1	31440X	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
25	96	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
26	144	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
27	8	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
28	12	81.38.66.340.1	31440X	.75	170	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			



Job Title

· Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

: NIMR

: PAIP00405 Station: Line Number

: P481335

Job No.

Isometric Dwg No.: NIM-3-2144-017-DQ-3

Proj. Code: DQ

Isowise MTO No. : NIM-3-2144-517-DQ-4

MTO Rev. No. : 0

Approved by

Prepared by

WBS No : NIM.IN.09.011

Checked by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

Proj. Code : DQ

: NIMR

: PAIP00405

Station:

Line Number

: P481335

Isometric Dwg No.: NIM-3-2144-018-DQ-3

Isowise MTO No. : NIM-3-2144-518-DQ-4

				Λ.	AATERL	AL FOR FABRICAT	ION			
	- 17		01		****				1	
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	3.5	74.30.03.020.1	31440X	15		Pipe	ASTM A106-B	S 160		
2	28.5	74.30.03.211.1	31440X	150		Pipe	ASTM A106-B	S 40		
3	8	74.30.05.373.1	11412	350		Pipe	ASTM A106-B	S20		
4	4	76.30.42.572.1	31440X	15		Elbow 90 Deg Bw	ASTM A234-WPB	S 160		
5	3	76.30.42.665.1	31440X	150		Elbow 90 Deg Bw	ASTM A234-WPB	S 40		
6	1	76.30.81.665.1	31440X	150		Equal Tee Bw	ASTM A234-WPB	S 40		
7	3	76.79.01.064.1	31440X	150	50	Branch Outlet Bw	ASTM A105	S 40 x S 80		
8	2	76.80.37.121.1	31440X	600	15	Branch Fitting Flgd	ASTM A105	S 160	300#	
9	9	76.62.78.566.1	31440X	150		Weld Neck Rf Flange	ASTM A105	S 40	300#	
10	2	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#	
11	6	76.62.78.652.1	31440X	15		Weld Neck Rf Flange	ASTM A105	S 160	300#	
				.1	MATER	RIAL FOR ERECTION	)N		1	
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
12	1	76.88.37.050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70		300#	
13	6	85.41.36.404.1	31440X	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
14	3	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
15	2	77.30.05.353.1	31440X	15		Globe Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
16	1	BY INST	300#	150		Emergency Shut Down Valve			300#	48-UZV- 2660
17	24	81.38.66.155.1	31440	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
18	8	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
19	60	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
20	16	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
21	3	NON MESC	31440X	50	50	Modular Constr. SBBV	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

: NIMR

: PAIP00405 Job No.

Proj. Code : DQ

Station:

Line Number

: P481362

Isometric Dwg No.: NIM-3-2144-019-DQ-3

Isowise MTO No. : NIM-3-2144-519-DQ-4

				N	MATERIA	AL FOR FABRICAT	ION			
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	95	74.30.03.211.1	31440X	150		Pipe	ASTM A106-B	S 40		
2	8	74.30.05.373.1	11412	350		Pipe	ASTM A106-B	S20		
3	16	76.30.42.572.1	31440X	15		Elbow 90 Deg Bw	ASTM A234-WPB	S 160		
4	1	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80		
5	9	76.30.42.665.1	31440X	150		Elbow 90 Deg Bw	ASTM A234-WPB	S 40		
6	2	76.79.01.064.1	31440X	150	50	Branch Outlet Bw	ASTM A105	S 40 x S 80		
7	8	76.80.37.121.1	31440X	600	15	Branch Fitting Flgd	ASTM A105	S 160	300#	
8	28	76.62.78.566.1	31440X	150		Weld Neck Rf Flange	ASTM A105	S 40	300#	
9	8	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#	
10	12	76.62.78.652.1	31440X	15		Weld Neck Rf Flange	ASTM A105	S 160	300#	

#### **MATERIAL FOR ERECTION**

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
11	1	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105		300#	
12	1	76.88.37.050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70		300#	
13	1	76.88.37.056.1	31440X	150		Spectacle Blind	ASTM A516-60/65/70		300#	
14	1	85.41.36.374.1	31440X	150		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
15	18	85.41.36.404.1	31440X	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
16	4	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
17	3	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
18	1	NON MESC	31440X	150		Ball Valve 14313 FB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
19	1	NON MESC	31440X	50		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
20	64	81.38.66.155.1	31440X	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM		-	
21	64	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
22	168	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			-
23	8	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
24	12	81.38.66.340.1	31440X	.75	170	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



· Nimr Słudge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Area

Job No.

Proj. Code : DQ

: NIMR

WBS No : NIM.IN.09.011

: PAIP00405

Station:

Line Number

: P481362

Isometric Dwg No.: NIM-3-2144-020-DQ-3

Isowise MTO No. : NIM-3-2144-520-DQ-4

MTO Rev. No. : O

	MATERIAL FOR FABRICATION												
Sr. No.	Quantity	MESC Number	Class	Size 1		Description	Material .	Sch./WT	Rating	Tag No.			
1	2	74.30.03.071.1	31440X	50		Pipe	ASTM A106-B	S 80					
2	36	74.30.03.211.1	31440X	150		Pipe	ASTM A106-B	S 40					
3	4	76.30.34.665.1	31440X	150		Elbow 45 Deg Bw	ASTM A234-WPB	S 40					
4	4	76.30.42.572.1	31440X	15		Elbow 90 Deg Bw	ASTM A234-WPB	S 160					
5	2	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80					
6	2	76.30.42.665.1	31440X	150		Elbow 90 Deg Bw	ASTM A234-WPB	S 40					
7	1	76.30.88.189.1	31440X	150	100	Tee Reducing Bw	ASTM A234-WPB	S 40 x S 40					
8	5	76.79.01.064.1	31440X	150	50	Branch Outlet Bw	ASTM A105	S 40 x S 80					
9	2	76.80.37.121.1	31440X	600	15	Branch Fitting Flgd	ASTM A105	S 160	300#				
10	1	76.62.78.564.1	31440X	100		Weld Neck Rf Flange	ASTM A105	S 40	300#				
11	22	76.62.78.566.1	31440X	150		Weld Neck Rf Flange	ASTM A105	S 40	300#				
12	11	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#				
13	2	76.62.78.652.1	31440X	15		Weld Neck Rf Flange	ASTM A105	S 160	300#				

#### **MATERIAL FOR ERECTION**

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
14	4	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105		300#	
15	1	76.62.11.126.1	31440X	150		Blind Flange	ASTM A105		300#	
16	1	76.88.37.056.1	31440X	150		Spectacle Blind	ASTM A516-60/65/70		300#	
17	4	85.41.36.404.1	31440X	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
18	6	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
19	4	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
20	2	77.30.05.353.1	31440X	15		Globe Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
21	1	NON MESC	31440X	50		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
22	1	NON MESC	31440X	150		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
23	16	81.38.66.155.1	31440X	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
24	104	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
25	144	81.38.66.337.1	31440X	.75	150	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
26	12	81.38.66.340.1	31440X	.75	170	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			
27	1	NON MESC	31440X	50	50	Modular Constr. SBBV	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

: NIMR

: PAIP00405

Station:

Proj. Code: DQ

Job No.

WBS No : NIM.IN.09.011

Line Number

: P481362

Isometric Dwg No.: NIM-3-2144-020-DQ-3

Isowise MTO No. : NIM-3-2144-520-DQ-4

MTO Rev. No.

: O

Prepared by

Checked by

Approved by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

: NIMR

Line Number

: P481334

Job No.

WBS No

: PAIP00405

Station: Isometric Dwg No.: NIM-3-2144-023-DQ-3

Proj. Code: DQ

Isowise MTO No. : NIM-3-2144-523-DQ-4

: NIM.IN.09.011

M

ITO Rev. No.	:	0
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Body: ASTM A105/A216

WCB/WCC WITH ALLOY 625 CLAD Trim: SDSS, PTFE

ASTM A193-B7M/A194-2HM

ASTM A193-B7M/A194-2HM

				M	ATERI	AL FOR FABRICAT	ION			
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	9	74.30.03.071.1	11440	50	<u>, , , , , , , , , , , , , , , , , , , </u>	Pipe	ASTM A106-B	S80		
2	2	76.30.42.608.1	11440	50		Elbow 90 Deg Bw	ASTM A234-WPB	S80		
3	4	76.62.78.360.1	11440	50		Weld Neck Rf Flange	ASTM A105	S80	150#	
					MATER	RIAL FOR ERECTION	ON	.1		
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
4	2	76.62.11.070.1	11440	50		Blind Flange	ASTM A105		150#	
5	2	76.88.37.020.1	11440	250		Spectacle Blind	ASTM A516-60/65/70		150#	
6	2	85.41.36.314.1	11440	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	
7	2	85.41.36.328.1	11440	250		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	
8	2	85.46.03.066.1	11440	50		Insulating Gasket	GRE G10 - Mylar	S80	150#	
9	2	NON MESC	11440X	50		Ball Valve RB Flgd.	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		150#	

Ball Valve 14313 FB Flgd

Stud Bolt With Nuts -

Stud Bolt With Nuts -

Prepared by



NON MESC

81.38.66.271.1

81.38.66.273.1

Checked by Let

Flange

SP/SB



150#

10

11

12

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

11440X 250

.625

90

100

11440

11440

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

WBS No

Proj. Code: DQ

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: P481357

Isometric Dwg No.: NIM-3-2144-024-DQ-3

Isowise MTO No. : NIM-3-2144-524-DQ-4

MTO Rev. No.

MATERIAL FOR FABRICATION											
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	, Material	Sch./WT	Rating	Tag No.	
1	.5	74.30.03.020.1	31440	15		Pipe	ASTM A106-B	S160			
2	1.5	74.30.03.071.1	31440	50		Pipe	ASTM A106-B	S80			
3	1	76.30.42.572.1	31440	15		Elbow 90 Deg Bw	ASTM A234-WPB	S160			
4	2	76.30.42.608.1	31440	50		Elbow 90 Deg Bw	ASTM A234-WPB	S80			
5	2	76.30.81.608.1	31440	50		Equal Tee Bw	ASTM A234-WPB	S80			
6	1	76.30.67.141.1	31440	20	15	Reducer Ecc.Bw	ASTM A234-WPB	S160 × S160			
7	1	76.30.67.193.1	31440	50	20	Reducer Ecc.Bw	ASTM A234-WPB	S80 × S160			
8	3_	76.62.78.610.1	31440	50		Weld Neck Rf Flange	ASTM A105	S80	300#		
9	2	76.62.78.652.1	31440	15		Weld Neck Rf Flange	ASTM A105	S160	300#		

#### MATERIAL FOR ERECTION

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	<b>Description</b>	Material	Sch_/WT Rating	Tag No.
10	2	85.41.36.404.1	31440	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring	300#	
11	1	77.30.05.353.1	31440	15		Globe Valve Flgd	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, Stellite 6	300#	
12	8	81.38.66.155.1	31440	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM		

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



: Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Агеа Job No.

WBS No

Proj. Code: DQ

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: D48183 / P48079

Isometric Dwg No.: NIM-3-2144-025-DQ-3

Isowise MTO No. : NIM-3-2144-525-DQ-4

MTO Rev. No.

MATERIAL FOR ERECTION												
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch.MT	Rating Tag No.			
1	1	76.62.11.070.1	11440	50		Blind Flange	ASTM A105		150#			
2	1	76.62.11.074.1	11440	100		Blind Flange	ASTM A105		150#			
3	1	85.41.36.314.1	11440	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#			
4	1	85.41.36.320.1	11440	100		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#			
5	4	81.38.66.271.1	11440	.625	90	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM					
6	8	81.38.66.273.1	11440	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM					

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area Job No. : NIMR

: PAIP00405

Station:

Line Number

: P481329

Isometric Dwg No.: NIM-3-2144-027-DQ-3

Isowise MTO No. : NIM-3-2144-527-DQ-4 MTO Rev. No.

Proj. Code: DQ

WBS No : NIM.IN.09.011

N	MATERIA	AL FOR FABRICATIO	N			
Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
0		Pipe	ASTM A312-TP316L	S40S		
0	15	Tee Reducing Bw	ASTM A403-WP316L	S40S× S40S		

			0.000	Size 1	Size 2	Description	- Material	Sch./WT	Rating	Tag No.
1	.5	74.36.33.026.1	33411	20		Pipe	ASTM A312-TP316L	S40S		
2	1	76.33.85.618.1	33411	20	15	Tee Reducing Bw	ASTM A403-WP316L	S40S× S40S		
3	1	76.65.80.402.1	33411	15		Weld Neck Rf Flange	ASTM A182-F316	S40S	300#	
4	2	76.65.80.404.1	33411	20		Weld Neck Rf Flange	ASTM A182-F316	S40S	300#	

#### MATERIAL FOR ERECTION

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch.WT	Rating	Tag No.
5	1	76.65.10.412.1	33411	15		Blind Flange	ASTM A182-F316		300#	
6	1	76.65.10.41471	33411	20		Blind Flange	ASTM A182-F316		300#	
7	2	85.41.36.404.1	33411	15		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
8	4	85.41.36.406.1	33411	20		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
9	1	77.23.03.353.1	33411	15		Gate Valve Flgd	Body: ASTM A182- F316/A351-CF8M Trim: AISI 316, Stellite 6		300#	
10	1	77.23.03.354.1	33411	20		Gate Valve Flgd	Body: ASTM A182- F316/A351-CF8M Trim: AISI 316, Stellite 6		300#	
11	1	77.13.19.354.1	33411	20		Check Valve Flgd	Body: ASTM A182- F316/A351-CF8M Trim: AISI 316, Stellite 6		300#	
12	8	81.38.61.155.1	33411	.5	70	Stud Bolt With Nuts - Flange	ASTM A193-B7/A194-2H			
13	16	81.38.61.269.1	33411	.625	80	Stud Bolt With Nuts - Flange	ASTM A193-B7/A194-2H			

Prepared by



Checked by



Notes:

. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

WBS No

Proj. Code: DQ

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: B481024

Isometric Dwg No.: NIM-3-2144-028-DQ-3

Isowise MTO No. : NIM-3-2144-528-DQ-4

MTO Rev. No.

ASTM A193-B7M/A194-2HM

: 0

				N	MATERIA	AL FOR FABRICAT	ION			
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch_/WT	Rating	Tag No.
1	3	74.30.03.109.1	11440	80		Pipe	ASTM A106-B	S80		
2	2	76.30.42.628.1	11440	80		Elbow 90 Deg Bw	ASTM A234-WPB	S80		
3	1	76.62.78.362.1	11440	80		Weld Neck Rf Flange	ASTM A105	S80	150#	
					MATER	RIAL FOR ERECTIO	N		<u> </u>	
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch_WT	Rating	Tag No.
4	1	85.46.03.082.1	11440	80		Insulating Gasket	GRE G10 - Mylar	S80	150#	

Stud Bolt With Nuts -

Prepared by

81.38.66.273.1

Checked by

Flange

Approved by

Notes:

5

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

11440

.625

100

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

: NIMR

: PAIP00405

Station:

80

.625

100

11440

11440

Line Number

B481025

Isometric Dwg No.: NIM-3-2144-029-DQ-3

Isowise MTO No. : NIM-3-2144-529-DQ-4

О

: NIM.IN.09.011 WBS No

Proj. Code: DQ

MTO I	₹ev.	No.	:

GRE G10 - Mylar

ASTM A193-B7M/A194-2HM

				7	MATERI	AL FOR FABRICAT	ION			
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	3	74.30.03.109.1	11440	80		Pipe	ASTM A106-B	S80	1	
2	2	76.30.42.628.1	11440	80		Elbow 90 Deg Bw	ASTM A234-WPB	S80		
3	1	76.62.78.362.1	11440	80		Weld Neck Rf Flange	ASTM A105	S80	150#	
		· · · · · · · · · · · · · · · · · · ·			MATE	RIAL FOR ERECTION	ON			
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
		40			100					

Prepared by	#

Checked by

Flange

Insulating Gasket

Stud Bolt With Nuts -



150#

S80

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.

85.46.03.082.1

81.38.66.273.1



Proj. Code : DQ

### **Isowise Material Take Off**

· Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

: B481031

Area Job No.

WBS No

: NIMR

: PAIP00405

: NIM.IN.09.011

Line Number

Station:

Isometric Dwg No.: NIM-3-2144-030-DQ-3

Isowise MTO No. : NIM-3-2144-530-DQ-4

MTO Rev. No. : O

	MATERIAL FOR FABRICATION												
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.			
1	6.5	74.30.03.071.1	31440X	50		Pipe	ASTM A106-B	S 80					
2	1	76.30.34.608.1	31440X	50		Elbow 45 Deg Bw	ASTM A234-WPB	S 80					
3	3	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80					
4	1	76.30.81.608.1	31440X	50		Equal Tee Bw	ASTM A234-WPB	S 80					
5	9	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#				

#### MATERIAL FOR ERECTION

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
6	1	76.62.11.120.1	31440X	50	-	Blind Flange	ASTM A105		300#	
7	1	76.88.37.050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70		300#	·
8	1	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
9	2	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
10	56	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
11	8	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			

Prepared by



Checked by



Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

WBS No

Proi. Code: DQ

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: B481032

centring-/SS inner ring

SDSS, PTFE

Body: ASTM A182 F55 UNS

N32760/A995 Grade 6A Trim:

ASTM A193-B7M/A194-2HM

ASTM A193-B7M/A194-2HM

Isometric Dwg No.: NIM-3-2144-031-DQ-3

Isowise MTO No. : NIM-3-2144-531-DQ-4

MTO Rev. No.

				N	MATERIA	AL FOR FABRICATI	ION			
14.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	8	74.30.03.071.1	31440X	50		Pipe	ASTM A106-B	S 80		
2	3	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80	†	
3	1	76.30.81.608.1	31440X	50		Equal Tee Bw	ASTM A234-WPB	S 80		
4	8	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#	
					MATER	RIAL FOR ERECTIO	N		1	
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch_/WT	Rating	Tag No.
5	1	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105		300#	
6	1	76.88.37.050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70		300#	
7	1	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS		300#	<u>.</u>

Ball Valve 14313 RB Flgd

Stud Bolt With Nuts -

Stud Bolt With Nuts -

Prepared by

Checked by

Flange

SP/SB

100

110

Approved by

300#

8

10

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

31440X

31440X

31440X

.625

2. PIPE Quantities are in meters & all other Items are in Numbers.

NON MESC

81.38.66.273.1

81.38.66.274.1



Proj. Code : DQ

### Isowise Material Take Off

Job Title

· Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area Job No. : NIMR

: PAIP00405

WBS No : NIM.IN.09.011

Station:

Line Number

: B481036

Isometric Dwg No.: NIM-3-2144-032-DQ-3

Isowise MTO No. : NIM-3-2144-532-DQ-4

MTO Rev. No.

: O

	MATERIAL FOR FABRICATION													
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2 Description	Material	Sch./WT	Rating	Tag No.					
1	26.5	74.30.03.071.1	11440	50	Pipe	ASTM A106-B	S80							
2	5	76.30.42.608.1	11440	50	Elbow 90 Deg Bw	ASTM A234-WPB	\$80							
3	3	76.30.81.608.1	11440	50	Equal Tee Bw	ASTM A234-WPB	S80							
4	3	76.62.78.360.1	11440	50	Weld Neck Rf Flange	ASTM A105	S80	150#						
5	2	76.62.78.610.1	31440	50	Weld Neck Rf Flange	ASTM A105	S80	300#						

#### **MATERIAL FOR ERECTION**

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch_/WT	Rating	Tag No.
6	1	76.88.37.010.1	11440	50		Spectacle Blind	ASTM A516-60/65/70		150#	
7	3	85.41.36.314.1	11440	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	
8	1	77.00.25.008.1	11440	50		Ball Valve RB Flgd.	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, PTFE		150#	
9	4	81.38.66.271.1	11440	.625	90	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
10	4	81.38.66.273.1	11440	.625	100	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			

Prepared by



Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

: NIMR

: PAIP00405

Line Number

: B481039

Proj. Code: DQ

Station: Isometric Dwg No.: NIM-3-2144-033-DQ-3

Isowise MTO No. : NIM-3-2144-533-DQ-4

WBS No : NIM.IN.09.011

MTO Rev. No. ; 0

	MATERIAL FOR FABRICATION													
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2 Description	Material	Sch./WT	Rating T	ag No.					
1	63.5	74.30.03.071.1	11440	50	Pipe	ASTM A106-B	\$80							
2	5	76.30.42.608.1	11440	50	Elbow 90 Deg Bw	ASTM A234-WPB	S80							
3	2	76.62.78.360.1	11440	50	Weld Neck Rf Flange	ASTM A105	\$80	150#						

#### **MATERIAL FOR ERECTION**

Sr. No.		MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT Rating	Tag No.
4	1	76.88.37.010.1	11440	50		Spectacle Blind	ASTM A516-60/65/70	150#	
5	3	85.41.36.314.1	11440	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring	150#	
6	1	77.00.25.008.1	11440	50		Ball Valve RB Flgd.	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, PTFE	150#	
7	4	81.38.66.271.1	11440	.625	90	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM		-
8	4	81.38.66.273.1	11440	.625	100	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM		

Prepared by



Checked by

Approved by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Station:

Discipline: Mechanical & Piping

Area

Job No.

Proj. Code: DQ

: NIMR

WBS No : NIM.IN.09.011

: PAIP00405

Line Number

: A48911

Isometric Dwg No.: NIM-3-2144-036-DQ-3

Isowise MTO No. : NIM-3-2144-536-DQ-4

MTO Rev. No.

: O

	MATERIAL FOR FABRICATION												
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating Tag No.				
1	.5	74.13.08.018.1	18011	15		Pipe	API 5L-B (galvanised)	S80					
2	.5	74.13.08.028.1	18011	25		Pipe	API 5L-B (galvanised)	S80					
3	1	76.06.85.034.1	18011	25	15	Tee Reducing Thrd	ASTM A234-WPB (galvanised)	S80 × S80					
4	1	76.06.28.016.1	18011	25		Coupling Thrd	ASTM A234-WPB (galvanised)	\$80					
5	1	76.06.66.008.1	18011	15		Plug Npt	ASTM A234-WPB (galvanised)	S80					
6	1	76.06.91.016.1	18011	25		Union Thrd	ASTM A234-WPB (galvanised)	S80					

#### MATERIAL FOR ERECTION

Sr. No.	Quantity	MESC Number	Class	Size 1   Size 2	Description	Material	Sch./WT Ratin	g Tag No.
7	4	77.07.02.452.4	40044	45	Dall Value Flack DD Tild	A COTAL DATE OF THE CO		
' '	ļ	77.07.03.153.1	18011	15	Ball Valve Float RB Thrd.	ASTM B148-UNS C95400,TRIM:ALUMINIUM	800#	
						BRONZE,PTFE		

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

WBS No

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

NIMR

: NIM.IN.09.011

Station:

Line Number

: D482612

: PAIP00405 Job No. Proj. Code : DQ

Isometric Dwg No.: NIM-3-2144-037-DQ-3

Isowise MTO No. : NIM-3-2144-537-DQ-4

MTO Rev. No.

: 0

	MATERIAL FOR FABRICATION													
	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.				
1	2.2	74.30.03.071.1	11440	50		Pipe	ASTM A106-B	S80						
2	26	74.30.03.149.1	11440	100		Pipe	ASTM A106-B	S40						
3	4	76.30.42.608.1	11440	50		Elbow 90 Deg Bw	ASTM A234-WPB	S80						
4	5	76.30.42.645.1	11440	100		Elbow 90 Deg Bw	ASTM A234-WPB	S40						
5	1	76.30.81.645.1	11440	100		Equal Tee Bw	ASTM A234-WPB	S40						
6	2	76.30.88.157.1	11440	100	50	Tee Reducing Bw	ASTM A234-WPB	S40 × S80						
7	4	76.62.78.314.1	11440	100		Weld Neck Rf Flange	ASTM A105	S40	150#					
8	2	76.62.78.360.1	11440	50		Weld Neck Rf Flange	ASTM A105	S80	150#					

#### **MATERIAL FOR ERECTION**

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT Rating	Tag No.
9	1	76.88.37.014.1	11440	100		Spectacle Blind	ASTM A516-60/65/70	150#	
10	4	85.41.36.320.1	11440	100		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring	150#	
11	1	77.00.25.012.1	11440	100		Ball Valve RB Flgd.	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, PTFE	150#	
12	16	81.38.66.273.1	11440	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM		
13	8	81.38.66.274.1	11440	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM		

Prepared by

Checked by

Approved by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

: NIMR

WBS No : NIM.IN.09.011

: PAIP00405

Line Number

: D482625

Station:

Isometric Dwg No.: NIM-3-2144-038-DQ-3

Proj. Code: DQ

Isowise MTO No. : NIM-3-2144-538-DQ-4

MTO Rev. No.

	MATERIAL FOR FABRICATION													
Sr. No.	Sr. No. Quantity MESC Number Class Size 1 Size 2 Description Material Sch./WT Rating Tag													
1	65.5	74.30.03.149.1	11440	100	Pipe	ASTM A106-B	S40							
2	6	76.30.42.645.1	11440	100	Elbow 90 Deg Bw	ASTM A234-WPB	S40							
3	2	76.62.78.314.1	11440	100	Weld Neck Rf Flange	ASTM A105	\$40	150#						

#### **MATERIAL FOR ERECTION**

	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT Rating	Tag No.
4	1	76.88.37.014.1	11440	100		Spectacle Blind	ASTM A516-60/65/70	150#	
5	3	85.41.36.320.1	11440	100		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring	150#	
6	1	77.00.25.012.1	11440	100		Ball Valve RB Flgd.	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, PTFE	150#	
7	8	81.38.66.273.1	11440	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM		
8	8	81.38.66.274.1	11440	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM		

Prepared by

Approved by

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

Job No.

WBS No

Proj. Code: DQ

; Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: D482626

Isometric Dwg No.: NIM-3-2144-039-DQ-3

Isowise MTO No. : NIM-3-2144-539-DQ-4

MTO Rev. No.

: 0

	MATERIAL FOR FABRICATION													
Sr. No. Quantity MESC Number Class Size 1 Size 2 Description Material Sch./WT Rating Tag N														
1	7	74.30.03.071.1	31440X	50	Pi	pe	ASTM A106-B	S 80						
2	1	76.30.42.608.1	31440X	50	EII	bow 90 Deg Bw	ASTM A234-WPB	S 80						
3	1	76.30.81.608.1	31440X	50	Ec	jual Tee Bw	ASTM A234-WPB	S 80	****					
4	11	76.62.78.610.1	31440X	50	W	eld Neck Rf Flange	ASTM A105	S 80	300#					

#### **MATERIAL FOR ERECTION**

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
5	1	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105		300#	
6	1	76.8 <del>8.37.</del> 050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70		300#	
7	3	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		300#	
8	3	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
9	1	NON MESC	31440X	50		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE		300#	
10	80	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
11	8	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM			

Prepared by

Checked by ∀

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

: Nimr Sludge Pits System upgrade - FED & DD

Discipline: Mechanical & Piping

Area

Job No.

Proj. Code: DQ

: NIMR

: PAIP00405

Station:

Line Number

: D482627

Isometric Dwg No.: NIM-3-2144-040-DQ-3

Isowise MTO No. : NIM-3-2144-540-DQ-4

: NIM.IN.09.011 WBS No

MTO Rev. No. : 0

	MATERIAL FOR FABRICATION											
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT		· ·		
1	8.5	74.30.03.071.1	31440X	50		Pipe	ASTM A106-B	S 80				
2	1	76.30.42.608.1	31440X	50		Elbow 90 Deg Bw	ASTM A234-WPB	S 80				
3	1	76.30.81.608.1	31440X	50		Equal Tee Bw	ASTM A234-WPB	\$ 80				
4	11	76.62.78.610.1	31440X	50		Weld Neck Rf Flange	ASTM A105	S 80	300#			

#### MATERIAL FOR ERECTION

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT Rating	
5	1	76.62.11.120.1	31440X	50		Blind Flange	ASTM A105	300#	
6	1-	76.88.37.050.1	31440X	50		Spectacle Blind	ASTM A516-60/65/70	300#	
7	3	85.41.36.414.1	31440X	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring	300#	
8	3	NON MESC	31440X	50		Ball Valve 14313 RB Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE	300#	
9	1	NON MESC	31440X	50		Check Valve Flgd	Body: ASTM A182 F55 UNS N32760/A995 Grade 6A Trim: SDSS, PTFE	300#	
10	80	81.38.66.273.1	31440X	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM		
11	8	81.38.66.274.1	31440X	.625	110	Stud Bolt With Nuts - SP/SB	ASTM A193-B7M/A194-2HM		

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



: Nimr Sludge Pits System upgrade - FED & DD Job Title

Discipline: Mechanical & Piping

Area Job No.

WBS No

: NIMR

: PAIP00405

: NIM.IN.09.011

Station:

Line Number

: D482624

Isometric Dwg No.: NIM-3-2144-041-DQ-3

Proj. Code: DQ

Isowise MTO No. : NIM-3-2144-541-DQ-4 MTO Rev. No.

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				J	MATERI	AL FOR FABRICAT	ION	, ,,		
Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
1	32	74.30.03.071.1	11440	50		Pipe	ASTM A106-B	S80		
2	1	74.30.03.109.1	11440	80		Pipe	ASTM A106-B	S80		
3	1	76.30.34.608.1	11440	50		Elbow 45 Deg Bw	ASTM A234-WPB	S80		
4	2	76.30.42.608.1	11440	50		Elbow 90 Deg Bw	ASTM A234-WPB	S80		
5	1	76.30.81.608.1	11440	50		Equal Tee Bw	ASTM A234-WPB	S80		
6	2	76.30.81.628.1	11440	80		Equal Tee Bw	ASTM A234-WPB	S80		
7	1 .	76.30.66.237.1	11440	80	50	Reducer Conc.Bw	ASTM A234-WPB	S80 × S80		
8	6	76.62.78.360.1	11440	50		Weld Neck Rf Flange	ASTM A105	S80 -	150#	
9	3	76.62.78.362.1	11440	80		Weld Neck Rf Flange	ASTM A105	S80	150#	
10	1	76.62.78.610.1	31440	50		Weld Neck Rf Flange	ASTM A105	S80	300#	
						DIAL FOR ERECTIO			J	L

#### **MATERIAL FOR ERECTION**

Sr. No.	Quantity	MESC Number	Class	Size 1	Size 2	Description	Material	Sch./WT	Rating	Tag No.
11	1	76.62.11.070.1	11440	50		Blind Flange	ASTM A105		150#	
12	1	76.62.11.072.1	11440	80		Blind Flange	ASTM A105		150#	***************************************
13	5	85.41.36.314.1	11440	50		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	, , , , , , , , , , , , , , , , , , , ,
14	4	85.41.36.318.1	11440	80		Gasket Spiral Wound	AISI 316, graphite filled CS centring-/SS inner ring		150#	
15	1	77.00.25.008.1	11440	50		Ball Valve RB Flgd.	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, PTFE		150#	
16	1	77.00.25.010.1	11440	80		Ball Valve RB Flgd.	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, PTFE		150#	
17	1	77.10.05.008.1	11440	50		Check Valve Flgd	Body: ASTM A105/A216- WCB/WCC Trim: AISI 316, Stellite 6		150#	
18	20	81.38.66.271.1	11440	.625	90	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			
19	16	81.38.66.273.1	11440	.625	100	Stud Bolt With Nuts - Flange	ASTM A193-B7M/A194-2HM			

Prepared by

Checked by

Approved by

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.



Job Title

WBS No

1 2

3

· Nimr Sludge Pits System upgrade - FED & DD

Class

11412

11412

11412

Discipline: Mechanical & Piping

Area

: NIMR

: NIM.IN.09.011

2

Station:

20

20

50

Line Number

: D482643

: PAIP00405 Job No.

Isometric Dwg No.: NIM-3-2144-043-DQ-3

Proj. Code: DQ

Sr. No. Quantity

Isowise MTO No. : NIM-3-2144-543-DQ-4

MTO Rev. No.

MATER	IAL FOR FABRICA	TION		
e 1 Size 2	Description	Material .	Sch./WT	Rating Tag No.
	Pipe	ASTM A106-B	S80	
	Elbow 90 Deg Bw	ASTM A234-WPB	S80	

ASTM A234-WPB

Prepared by



**MESC Number** 

74.30.05.028.1

76.30.40.574.1

76.29.46.192.1

Checked by

Reducer Conc.Bw



S40 × S80

Notes:

1. UOM of Sizes are in mm except Stud Bolts (Size 1 in inch & Size 2 in mm).

2. PIPE Quantities are in meters & all other Items are in Numbers.

Electrical Scope of Work

PAIP00405- Nimr Sludge Pit Up gradation.



### PETROLEUM DEVELOPMENT OMAN

# Specification for 415V Junction Boxes For Nimr Sludge pit system upgrade -FED / DD

Project No PAIP00405

WBS NO.C.OM. NIM. IN. 09.011 Contract No.: C 31/0606

AVME Code: 4.16.6 Criticality rating: 4

Ву



# WorleyParsons - Arabian Industries (JV)

Rev. No.	Date	Description	Prepared	Checked	Appr	oved by
			by	by	WPAI	PDO
0	Sep 2010	Issued for Comment	KD	PVT	LM	OSE/29N
Α	May 2011	Issued for Enquiry	-KD	PVT	LM	
В	Aug'2011	Revised & Re-issued for enquiry	July 1	r. EN	Land	Dignat-
					1.0	
		<u> </u>	WPAL	Document No.:	PAIP00405/	RQ/4 <b>0</b> 2

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Specification for 415V Junction Box

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1.	Scope of supply	3
2.	Specification	3
3.	Quality requirements	4
	Attachments	
	Attachment- 1 Junction Box G.A Drawing (415V power supply J.B))	



#### 1. SCOPE OF SUPPLY

This specification covers the minimum requirements for the supply of 415V Junction Box for Nimr Sludge pit system upgrade -FED / DD Project of Petroleum Development Oman LLC (PDO), hereafter referred to as the Company/ Principal.

#### 2.

Item	Description					
1	Junction box Ex`e' type suitable to mount on steel structure complete with drilled gland plate, cable glands, blanking plugs and terminals as detailed below.					
	Application  Explosion protection	: 415V Power Supply Distribution in Hazardous area, Zone-2. : EExe IIC T6				
	Ingress protection Housing material	<ul><li>: IP 65 as per IEC 529</li><li>: Polyester resin Impact strength &gt; 7Nm,</li><li>Material self extinguishing and flame resistant</li></ul>				
	Gasket Terminals Earth Terminals	: EPDM : 8 Nos. for 240mm <sup>2</sup> & 8 Nos. for 50mm <sup>2</sup> cable : 1 x 25 sq.mm + 3 x 2.5 sq.				
	Earth Continuity Cable glands and blanking plug	: Internal earth plate for metal glands : Refer Attachment-1				
	Cable entries shall be arrangement.	from bottom, Refer Attachment-1 for general				
	The JB shall be provid	ed with following label.				
	1 No. Power JB : 48-JI	B-001				
2	Junction box Ex'e' type suitable to mount on steel structure complete with drilled gland plate, cable glands, blanking plugs and terminals as detailed below.					
	Application	: 415V Power Supply Distribution in Hazardous area, Zone-2.				
	Explosion protection Ingress protection Housing material	: EExe IIC T6 : IP 65 as per IEC 529 : Polyester resin Impact strength > 7Nm,				
	Gasket	Material self extinguishing and flame resistant EPDM				
	Terminals  Earth Terminals	: 8 Nos. for 10mm <sup>2</sup> & 8 Nos. for 2.5 mm <sup>2</sup> cable : 1 x 25 sq.mm + 3 x 2.5 sq.				
	Earth Continuity Cable glands and blanking plug	: Internal earth plate for metal glands : Refer Attachment-2				
	Cable entries shall be from bottom, Refer Attachment-2 for general arrangement.					
	The JB shall be provided with following labels.					
	8 Nos. Area Lighting JB : FLP-1 To FLP-8 and					
	1 No. Shed Lighting Jl	D. 1 TO 1D 4				



#### 3. QUALITY REQUIREMENTS

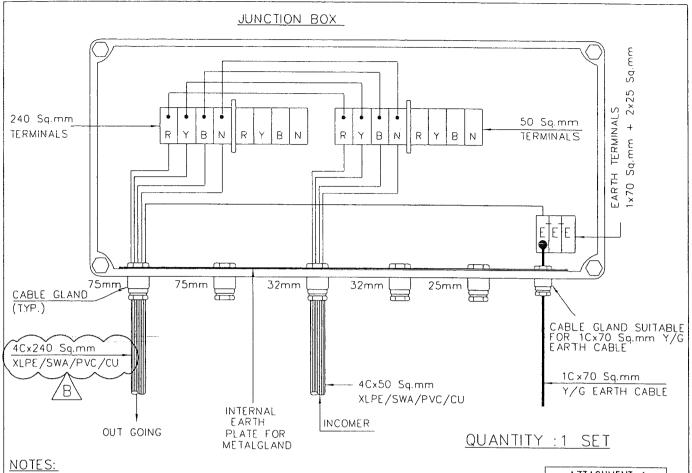
The quality requirements for criticality rating category 4 equipments are as below.

- 3.1 All requirements of SP-1171 and ISO 9001:2000 shall be complied.
- 3.2 Any non-compliance, deficiencies or defects revealed at any stage during execution of the supply shall be rectified / corrected by the Supplier at his cost and expenses.
- 3.3 All material certification shall affirm compliance with relevant Company technical specifications. Manufacturer shall have a quality system certified by a competent body established within the EC, and having undergone a specific assessment for materials.
- 3.4 Supplier shall establish a documented procedure for source/receiving inspection and verification of material certificates of all base materials/brought out items used.
- All material shall be inspected by PDO on arrival at Majan stores and any material if found non conforming to the requirements of this specification in total shall be rejected.



Attachment-1 Junction Box G.A Drawing (415V)





- LINKS BETWEEN TERMINALS AND CONNECTION TO TERMINAL BLOCK SHALL BE PROVIDED BY THE VENDOR
- 2. TERMINAL ARRANGEMENT SHOWN IS INDICATIVE ONLY.
- 3. VENDOR TO PROVIDE BARRIER BETWEEN PHASE TERMINALS. PHASE TERMINALS.
- 4. VENDOR TO PROVIDE HAWKE 501/453 OR EQUIVALENT TYPE OF CABLE GLANDS AS SHOWN IN THE SKETCH. IN ADDITION VENDOR SHALL SUPPLY SUITABLE THREADED BLANKING PLUGS FOR 1 NOS OF 75mm, 32mm AND 25mm CABLE ENTRIES EACH.

ATTACHMENT-1 TO REON. PAIP00405/RO/402 SHEET 1 OF 2

APPROVED FOR CONSTRUCTION

THIS COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT WBS# C.OM.NIM.IN.09.011

ورلي بارسونز ـ الصفاعات العربية (محاصة ) (WorleyParsons - Arabian Industries (JV)

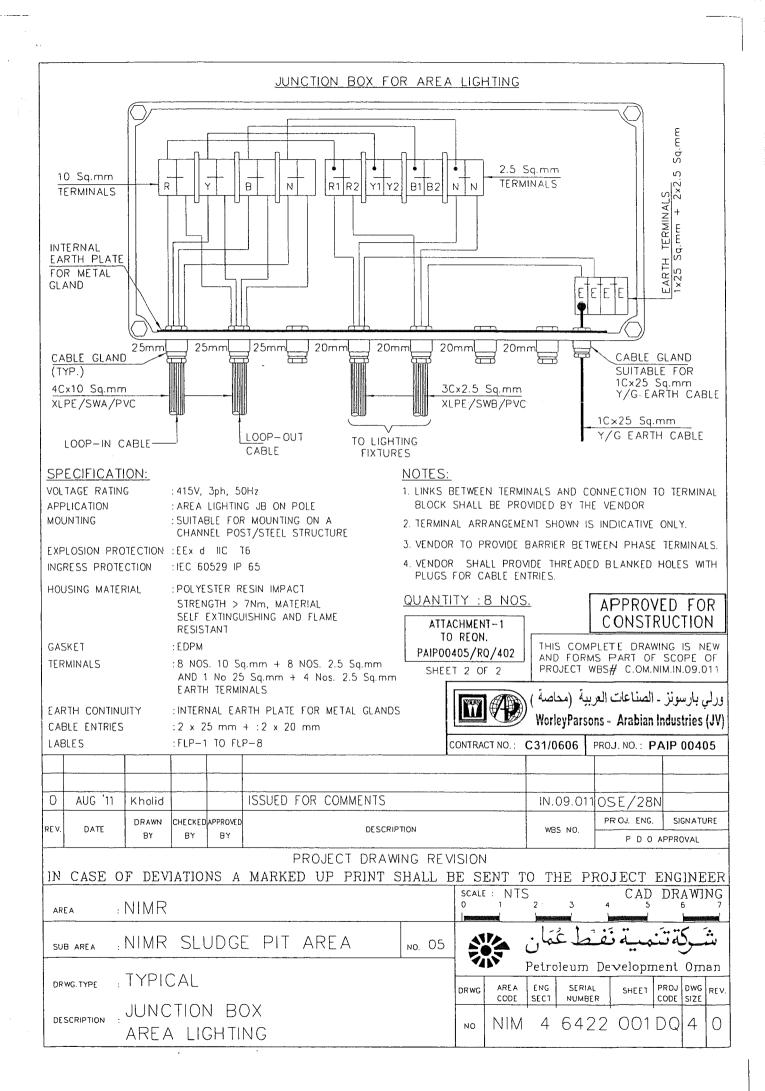
L						CONTRACT NO.: C31/0	0606 PROJ. NO.	PAIP-00405
В	June '11	Kholid			REVISED & RE-ISSUED AS AFC	IN.09.011	OSE/28N	
Α	MAY '11	Kholid	NMN	LM	APPROVED FOR CONSTRUCTION	IN.09.011	OSE/28N	
0	SEP '10	Kholid	KD	PVT	ISSUED FOR COMMENTS	IN.09.011	OSE/28N	
REV.	DATE	DRAWN	CHECKED	APPROVED	DESCRIPTION	WBS NO.	PROJ. ENG.	SIGNATURE
		BY	BY	BY	DESCRIPTION	W63 NO.	PDOA	PPROVAL

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER SCALE : CAD DRAWING NIMR AREA NIMR SLUDGE PIT AREA SUB AREA NO. 05 Petroleum Development Oman TYPICAL DRWG. TYPE AREA ENG PROJ DWG DRWG SHEET CODE ELECTRICAL JUNCTION MIM 4 6414 001 DQ В BOX 48-JB-001

Attachment-2
Junction Box G.A Drawing (Lighting J.B)







#### PETROLEUM DEVELOPMENT OMAN

Specification of Outdoor Distribution Board For Nimr Sludge pit system upgrade -FED / DD

Project No PAIP00405

WBS NO.C.OM. NIM. IN. 09.011 Contract No.: C 31/0606

AVME Code: 4.10.2 Criticality rating: 3

Ву



### WorleyParsons – Arabian Industries (JV)

Rev. No.	Date	ete Description		Checked	Approved by		
			by	by	WPAI	PDO	
0	Sep 2010	Issued for Comment	KD	PVT	LM	OSE/29M	
А	May 2011	Issued for Enquiry	Nąsser	PVT	LM		
В	Aug'2011	Revised & Re-issued for enquiry	外	t gn	D.F.	Plyan	
					1		
			WPAI	Document No.:	PAIP00405/	RQ/401	

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2.	SCOPE OF SUPPLY	-3
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4.	APPLICABLE STANDARDS	-5
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6.	TESTING AND INSPECTION	6
7.	SPECIAL TOOLS	6
8.	WARRANTY	-6
9.	PACKING, TRANSPORT & SHIPMENT	-6
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Attachment – 1- Technical Requirements

Attachment – 2 - Table of Compliance

Attachment – 3 - Site Climatic & Outdoor Conditions

Attachment – 4 - System Voltage and Frequency

Attachment – 5 - Requisition for Vendor Engineering Documents

Attachment – 6 - Single Line Diagram

Attachment – 7 - Vendor transmittal Format

Attachment – 8 – SAP PM Format



#### 1. INTRODUCTION

This specification covers the minimum requirements for the design, manufacture, assembly, inspection, testing, supply, packing and delivery of Outdoor Distribution board for Nimr Sludge pit system upgrade -FED / DD Project of Petroleum Development Oman LLC (PDO), hereafter referred to as the Company/ Principal.

#### 2. SCOPE OF SUPPLY

The Vendor's scope of work includes supply of the following Distribution board as per the Specifications detailed/referred in this requisition.

Item No	Description		Rating	Qty	Remarks
1	Outdoor Board	Distribution	415V, 125A,3Ph +N 50Hz, 10 kA for 1sec	1 Nos	Refer Single line diagram (attachment 6)

#### 3. SPECIFICATION

#### 3.1. General Requirements

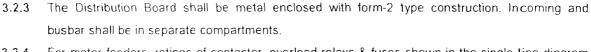
- 3.1.1 All equipment, materials and systems shall be designed, manufactured, tested, supplied in accordance with the specification and attached data sheets. As a minimum, equipment and the system supplied by the Vendor shall satisfy the requirements of this specification and also shall meet the working and operating condition requirements listed in other sections of this document such as data sheets / DEP / SP.
- 3.1.2 It shall be the responsibility of the vendor to provide work/materials in accordance with the best modern practice and nothing written or implied in this specification shall relieve the vendor of his responsibility for the quality and soundness of the finished work, which must be adequate for the duty intended.
- 3.1.3 The Vendor shall be in possession of the latest Shell DEPs and PDO Specification (SP). Non-availability of these documents will not be accepted as an excuse for non-compliance. The order of precedence shall be as follows:
  - Decrees and Laws of the Sultanate of Oman
  - This Technical specification/Contract/Enquiry Document.
  - Specifications (SP)
  - SIPM Design and Engineering Practices (DEP's)
  - · International Codes and Standards
- 3.1.4 Unless alternative standards are specifically mentioned in the Specifications, all materials and equipment used and provided for the Work shall be in accordance with SP and DEP recommendations. Where no such recommendation exists, then materials shall be in accordance with IEC or ISO or such other standards, as in the opinion of the Company ensures an equivalent



or higher quality. The standards used shall be the latest published at the time of tender / bid / offer submission.

#### 3.2. Technical requirements

- 3.2.1 The incoming and out going feeder details for Distribution Board shall be as per the Single line diagram attached as attachment-6.
- 3.2.2 The Distribution Board shall be designed for outdoor installation conditions as indicated in Attachment 3 and shall be suitable for outdoor structural mounting type.



- 3.2.4 For motor feeders, ratings of contactor, overload relays & fuses shown in the single line diagram are tentative. Vendor shall select the components to conform to type-2 co-ordination as specified in IEC 947-4-1. The non-latchable contactor feeders for motors shall have restart facility with settable time delay. The internal wiring of the motor feeders shall be as per PDO standards.
- 3.2.5 Cable entries for all shall be from bottom. The Distribution Board shall be provided with cable glands of HAWKE or equivalent type for fixing cables. The lowest cable termination point shall not be less than 200mm from the gland. Gland plate shall be Non-magnetic.
- 3.2.6 Labelling on the Distribution Board shall conform to the following:
  - Main name plate as referred to in DEP 33.67.01.31 Gen. clause 5.1.1
  - Circuit labels as referred to in DEP 33.67.01.31 Gen. clause 5.1.2 (a) & (b).
  - · Distribution Board identification label.
- 3.2.7 Painting and coating shall be to RAL 7036 in accordance with SP-1246 Part-1 to 5.
- 3.2.8 The distribution board shall be provided with IP55 protection.

#### 3.3 Drawing/Documents required along with offer

- 3.3.1 The following drawings/documents shall be submitted for approval before manufacturing:
  - Filled in requisition data sheets attached under (Attachment-1)
  - Filled in Table of Compliance attached under (Attachment-2)
  - · General arrangement drawing with dimensions for the Power DB.
  - · Single line diagrams
  - List of commissioning spares with quantity
  - · List of any special tools or accessories required for installation
  - Schedule for design, manufacture and supply
  - · Type test certificate for similar Power DB.
- 3.3.2 All drawings and documents shall be submitted as per the RED (Refer attachment-5) form enclosed with the requisition. Final certified drawings and transparencies (or floppies) shall be submitted after agreement and incorporation of all comments made by the principal / consultant.
- 3.3.3 Offer shall include commissioning spares. Similarly the list of spare parts required for two years of operation shall be offered as a separate item in the quotation. Manufacturer to complete and



- submit the E-SPIR form. SPIR forms shall be collected by the successful bidder from PDO as described in DEP 70.10.90.11-Gen. Spare parts Manual, Clause 1.3.2.
- 3.3.4 The equipment shall be suitably packed for transportation & submit the packing details for purchaser approval.

#### 4. APPLICABLE STANDARDS

The applicable PDO Documents, Codes and Standards are listed below:

DEPs/SPs	DESCRIPTION
SP-1103	Electrical Engineering Guide lines "(Amendment to DEP 33.64.10.10-Gen).
SP-1121	Specification for LV Switchgear and Control Assemblies.
SP-1100	Specification for Testing and Commissioning of Electrical Equipments.
SP-2047	Preparation and Content of Engineering Drawings.
SP-1285-E	Specification for Civil and Building Utility Services.
SP-1107	Electrical Protection System
SP-1105	Electrical Standard Drawing
SP-1171	Specification for Quality Assurance of Design, Construction and Engineering Works
SP 1246	Engineering standard specification for painting and coating systems for oil & gas facilities
PR 1443	Spare Parts and Interchangeability Record
SP-1099	Electrical Installation Practice
DEP 33.64.10.10-GEN	Electrical Engineering Design
DEP 33.67.01.31	Low voltage switchgear and controlgear assemblies

#### 5. QUALITY REQUIREMENTS

The quality requirements for criticality rating, category 3 equipments are as below.

- 5.1. All requirements of SP-1171 and ISO 9001:2000 shall be complied in all phases of the Service.
- 5.2. Any non-compliance, deficiencies or defects revealed at any stage during execution of the supply shall be rectified / corrected by the Supplier at his cost and expenses.
- 5.3. All material certification shall affirm compliance with relevant Company technical specifications. Manufacturer shall have a quality system certified by a competent body established within the EC, and having undergone a specific assessment for materials.



- **5.4.** Supplier shall establish a documented procedure for source/receiving inspection and verification of material certificates of all base materials/brought out items used.
- 5.5. The Vendor shall submit quality control plan in accordance with SP-1171 for approval of purchaser's QA Manager/Inspector. The quality control plan shall cover all phases of design, manufacture, installation & testing including list of all applicable standards, planned data for each test, evidence of compliance with ISO 9001, Identify Hold, Witness, Review, Monitor, and Surveillance points for confirmation to purchaser.
- **5.6.** The vendor shall seek prior approval of Sub-Supplier list from WPAI /PDO, if outside the PGSC List.
- **5.7.** All necessary facilities shall be extended by vendor to the purchaser for witnessing the functional or final tests as per clause number 6 below.
- 5.8. The Equipment /Material shall be certified by the third party inspection agency (TPI) arranged by PDO. TPI shall issue certificate as required by SP-1171.
- **5.9.** Vendor shall furnish inspection reports as per RED form attached with the requisition.

#### 6. TESTING AND INSPECTION

- **6.1.** Type test certificates for similar equipment shall be provided with the offer.
- 6.2. The Distribution Board shall be tested at Manufacture's works for routine test as per cl. 8.00 of DEP 33.67.01.31-GEN (only applicable clauses). The Vendor shall submit Works Inspection Test Procedure for all the inspection & tests to be conducted at Manufacturer's work. All test reports shall be submitted for company's approval before dispatch the DB.
- **6.3.** Equipment shall be dispatched from the manufacturer's factories only after the factory tests, approval of packing/transport details 8 dispatch clearance granted by the Purchasers.

#### 7. SPECIAL TOOLS

The Vendor shall recommend and include special tools which may be required for the installation, operation & maintenance of the equipment being supplied. A list of special tools & tackles shall be supplied with the offer.

#### 8. WARRANTY

Warranty for equipment shall be in accordance with applicable, relevant DEP/SP

#### 9. PACKING, TRANSPORT & SHIPMENT

Packing, transport & shipment shall be in accordance with DEP 33.67.51.31 & SP-1120 and packing / forwarding details to be approved by purchaser prior to dispatch

#### 10. DELIVERY, INSURANCE & PAYMENT TERMS



Delivery, insurance & payment terms shall be in accordance with the commercial part of the requisition/ purchase order.



# ATTACHMENT – 1 TECHNICAL REQUIREMENTS



DISTRIBUTION BOA	for ARD	Contr Job No PAIP00405 MESC No
DICTION BOX		MEGG NO.
REQI	UIREMENTS AND CONDITIONS	5
	General	
Specific requirements : DEP 33.67.01.31-	Gen, SP-1121,SP-1107	
	SLD UNDER ATTACHMENT 6	(Form Dep 33 67.01.81
Power system type : TN-S/ 415V, 3Ph+		(r om ecp 60.01.01.01
Rated current of busbar system : 125A	- 14, 4 WIE	
	4.6	
Rated short time withstand current : 10kA for		
Service conditions : temperate/tropical	l/ <del>indoors/</del> outdoors	
Special service conditions : NIL		
Type of enclosure : metal <del>/ insulating i</del>	<del>material</del> , multi-box / <del>multi-cubicl</del>	e
Type of mounting : structural/ floor / w	<del>val</del> l	
Framework required : yes /-no	Cable entries	: incoming: below <del>/above</del>
Type of fuses : DIN/BS/HRC		: outgoing: below <del>/above</del>
Inspection required : yes / no	Cable gland plate	: <del>drilled/</del> undrilled
Language on documents : English/	Glands required	
		: yes-/no
on equipment : English/	Glands type	: weather proof double compression
	MITTED BY MANUFACTURER	WITH THE QUOTATION
Make and type :	1.6	
Short-circuit strength : Thermal:	kA-rms, 1s; dynamic	: kA crest :
Type of enclosure :	***************************************	
Type of mounting :		
Degree of protection : IP - 55		
Rain canopy : <del>yes</del> / no		
Total mass of equipment :	kg	
Specified tender document attached : yes / no		
Any deviations from specification : no		
(if yes, list deviations) :		
SPECIAL REQUIREMENTS AND REMARKS		REMARKS ON REVISIONS
SPECIAL REQUIREMENTS AND REMARKS  1. Panel shall be constructed in form-2 configuration.	0 - ISSUE	REMARKS ON REVISIONS D FOR COMMENTS
		7
	A - ISSUEE	D FOR COMMENTS
Panel shall be constructed in form-2 configuration.	A - ISSUEE	D FOR COMMENTS
Panel shall be constructed in form-2 configuration.      Live parts inside the cubicle shall have min. degree of prot	A - ISSUEE	D FOR COMMENTS
Panel shall be constructed in form-2 configuration.      Live parts inside the cubicle shall have min. degree of prot	A - ISSUEE	D FOR COMMENTS
Panel shall be constructed in form-2 configuration.      Live parts inside the cubicle shall have min. degree of prot	A - ISSUEE	D FOR COMMENTS
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Panel shall be constructed in form-2 configuration.      Live parts inside the cubicle shall have min. degree of prot	A - ISSUEE	D FOR COMMENTS
Panel shall be constructed in form-2 configuration.      Live parts inside the cubicle shall have min. degree of prot	A - ISSUEE	D FOR COMMENTS
Panel shall be constructed in form-2 configuration.     Live parts inside the cubicle shall have min. degree of prot of IP-20 when the door is open.	A - ISSUEE	D FOR COMMENTS D FOR ENQUIRY
1. Panel shall be constructed in form-2 configuration. 2. Live parts inside the cubicle shall have min. degree of prot of IP-20 when the door is open.  Made by KD	A - ISSUE	D FOR COMMENTS
1. Panel shall be constructed in form-2 configuration.  2. Live parts inside the cubicle shall have min. degree of prot of IP-20 when the door is open.  Made by KD EQUIPMENT: OUTDOOR DIST	A - ISSUED	D FOR COMMENTS D FOR ENOURY
Panel shall be constructed in form-2 configuration.  Live parts inside the cubicle shall have min. degree of prot of IP-20 when the door is open.  Made by KD EQUIPMENT: OUTDOOR DIST	A - ISSUED	PER COMMENTS DEFORE ENOUGHY  Rev letter  Date  Seption  MAY'11  Signature
1. Panel shall be constructed in form-2 configuration.  2. Live parts inside the cubicle shall have min. degree of prot of IP-20 when the door is open.  Made by  KD  EQUIPMENT: OUTDOOR DIST  Checked by  PLANT: NIMR SLUDGE PIT AR  Appr. by  CONSIGNEE: PETROLEUM DE	A - ISSUED	D FOR COMMENTS D FOR ENQUIRY  Rev letter O A  Date SEP'10 MAY'11  Signature KD
1. Panel shall be constructed in form-2 configuration.  2. Live parts inside the cubicle shall have min. degree of prot of IP-20 when the door is open.  Made by KD EQUIPMENT: OUTDOOR DIST  Checked by PVT PLANT: NIMR SLUDGE PIT AR  Appr. by LM CONSIGNEE: PETROLEUM DE	A - ISSUED	PER COMMENTS DEFORE ENOUGHY  Rev letter  Date  Seption  MAY'11  Signature
Made by  Checked by  PUT Appr. by  KD  CONSIGNEE: PETROLEUM DE	A - ISSUED	D FOR COMMENTS D FOR ENQUIRY  Rev letter O A  Date SEP'10 MAY'11  Signature KD

# ATTACHMENT – 2 TABLE OF COMPLIANCE



#### TABLE OF COMPLIANCE

The Vendor shall confirm below that he has accepted all the clauses contained in the specification or otherwise made clarifications or exceptions as furnished below:

Spec. Ref Paragraph	Conform Y/N	Alternatives Y/N	Noted Y/N	Clarification
1				
2				
3.1.1				
3.1.2				
3.1.3				
3.1.4				
3.2.1				
3.2.2				
3.2.3				
3.2.4				
3.2.5				
3.2.6				
3.2.7				
3.2.8				
3.3.1				
3.3.2				
3.3.3				
3.3.4				
4				
5.1				
5.2				
5.3				
5.4				
5.5				
5.6				
5.7				
5.8				
5.9				
		J		

Spec. Ref Paragraph	Conform Y/N	Alternatives Y/N	Noted Y/N	Clarification
6.1				
6.2				
6.3				
7				
8				
9				
10				
ATTACHMENT-1				
ATTACHMENT-3				
ATTACHMENT-4				
ATTACHMENT-5				
ATTACHMENT-6				
ATTACHMENT-7				
ATTACHMENT-8				
ATTACHMENT-9				

Specification for Outdoor Distribution boards

## ATTACHMENT – 3 SITE CLIMATIC & INDOOR CONDITIONS



## SITE CLIMATIC AND INDOOR CONDITIONS (EXTRACT FROM SP-1103)

#### 1. SITE CLIMATIC CONDITIONS

Maximum relative humidity

Maximum black bulb temperature82 °CPeak shade temperature, two hours60 °CContinuous ambient temperature55 °CMinimum average ambient temperature5 °CMaximum daily variation in temperature25 °C

Maximum ground temperature at various below-grade-levels

35 °C @ 800 mm -38 °C @ 650 mm 40 °C @ 500 mm

98%

Minimum ground temperature

20 °C @ 1000 mm below grade

Soil Thermal Resistivity

240 °C cm/W

Maximum infrequent heavy rainfall

25 mm/hour

No earthquakes

Elevation not greater than

120 m A.S.L.

Maximum Isokeraunic level

10 days per annum

Maximum 3 second gust wind speed

122 km/hour

Solar radiation

120 mW/cm<sup>2</sup>

Local conditions are characterised by frequent sand storms when the atmosphere becomes heavily laden with dust particles. Rain is infrequent but is often combined with hail and sand storms. At certain times of the year early morning dew occurs.

Equipment installed outdoors shall be designed for operation in the environment stated above. For continuous temperature rating of such equipment, reference shall be made to the various equipment DEPs and SPs.

#### 2. INDOOR CONDITIONS

Indoor conditions exist inside control rooms, switch rooms, substations, battery rooms etc. and such rooms are considered to be air-conditioned (redundant system). Inside temperature is maximum  $25^{\circ}\text{C}$  with all units operating and  $35^{\circ}\text{C}$  with one unit out of service. Equipment nstalled in such rooms shall be specified for a continuous operating temperature of  $40^{\circ}\text{C}$ , and at  $50^{\circ}\text{C}$  for two hours in one day.



# ATTACHMENT – 4 SYSTEM VOLTAGE AND FREQUENCY



#### (A) SYSTEM VOLTAGE AND FREQUENCY

(Extract from SP-1103)

#### STANDARD VOLTAGES, FREQUENCY AND NEUTRAL EARTHING

Frequency : 50 Hz

: 132 kV High voltage 3 phase solidly earthed High voltage : 33 kV 3 phase solidly earthed

High voltage 3 phase : 11 kV resistance earthed (see note 1, 2, 3)

High voltage : 6.6 kV 3 phase resistance earthed (see note 1, 2)

3 phase & neutral solidly earthed Low voltage : 415/240 V

1. For distribution systems, the earth fault current shall be limited to approximately the nominal current of the supply

- 2. For generators and motor unit transformers, the earth fault current shall be limited to 5A
- 3. The use of 11 kV should be limited to ring circuits for camps

#### 2. SUPPLY VARIATIONS

a) Steady state:

:  $\pm$  10% at a voltage of 132 kV and  $\pm$  5% at voltages below 132 kV Voltage

Frequency : ± 2%

b) Dynamic:

e)

± 15% at common buses. Voltage

#### **EQUIPMENT OPERATING VOLTAGES**

Equipment shall be suitable for operation at the following voltages:

a) Motors above 2200 kW By unit transformer from 33 kV or 132 kV

b) Motors 185 kW-2200 kW: 6.6 kV (see note 1 below)

Motors up to 160 kW 415 V c)

Lighting supply 415/240 V: 3 phase & neutral d)

240 V: phase & neutral Lighting systems Instruments (non-vital) 240 V; phase & neutral f)

Instruments (vital) 240 V: phase & neutral (see note 2) 2)

Instruments (vital) 24 V DC floating h)

Welding outlets 435 V: 3 phase & neutral 1) Convenience outlets 240 V; phase & neutral j)

110 V DC floating Switchgear closing k)

Switchgear tripping 110V DC floating

48 V DC positive earth m) E:ectrical SCADA system:

1. Preferred voltage for HV motors is 6.6 Kv

Supply from Uninterruptible Power Supply System (UPS).



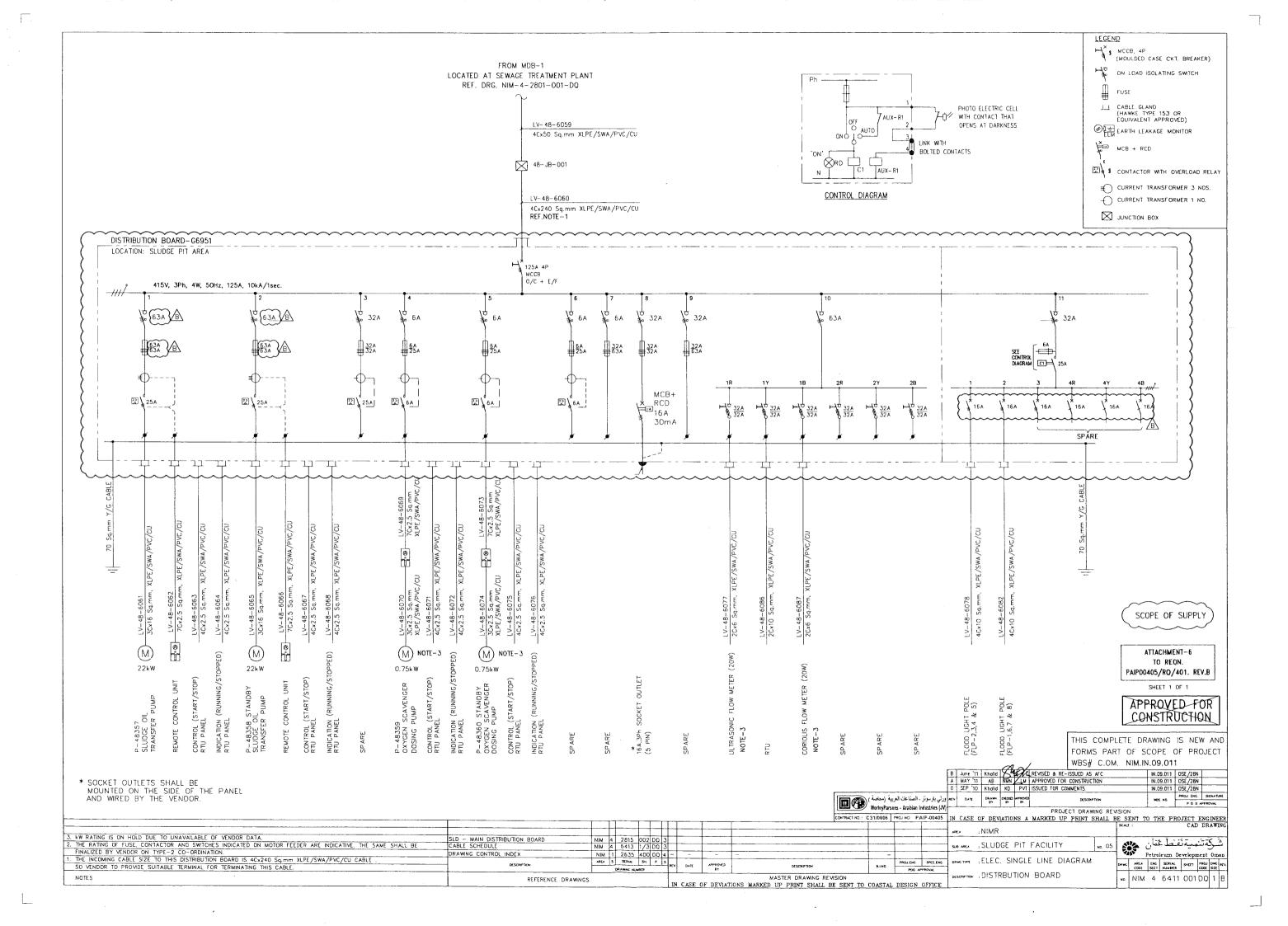
# ATTACHMENT – 5 REQUISITION FOR VENDOR ENGINEERING DOCUMENTS



REQUISITION FOR EN					"RED" form
The following addresses shall be inserted by Setter in the DEP 05.00.54.81-Gen, or the "Final Drawing Specification of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the province of the pr				ing Spec	cification" (ADS) from
			7.54.02-Gen		Citable and Citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a citable and a cita
Purchasing (Procurement) Office	Principa				Distribution Office (Note2)
•	olium Developr	ment Oma	an LLC		
Attn					
P.O.	.B. 81,Postal Co	ode 113			
Mus	cat				
Sult	anate Of Oman	ı			
SPECIAL INSTRUCTIONS				Prints	Documents shall be submitted to
Production Schedule				3	Nominated inspector before pre-manufacturing meeting
Manufacturing, inspection and testing sequence plan				3	Within 2 weeks from the order date.
DRAWINGS		Required	number for		TIMING FOR SUBMITTAL
	Appro	oval	Finaliss	ue	For Approval; Within 2 weeks of order placement
Approval drawings/Final drawings to be	Transpa-	Prints	Originals	Prints	For Final Document Submission Within 2 weeks of
submitted under cover of an ADS form/	rencies		(Note 1)		the approval / order placement.
	10000		(1.010 1)		
FDS form respectively		1			Documents shall be submitted to
		1			Distribution Office (WPAI) by Vendor / Sub-contractor
Drawing and Document List		3	1	3	-
Quality Control Plan / Inspection and Test Plan		3		ļ	Refer Note 4 below
Single Line Diagrams		3	1	3	Refer Note 5 below
Schematics Drawings		3	1	3	
Bill of Materials		3	1	3	
E ent Data sheets		3	1		1
General Arrangement Drawings		3	1		1
Installation Details	-	3	1	<del> </del>	1
mistandhun Uetans		+ 3		- J	1
					-{
SPARE PARTS DOCUMENTS				4	
E-SPIR plus 1 printed copy as per PR-1443.				3	Distribution Office (WPAI) by Vendor / Sub-contractor
					Within 6 weeks of order placement
TEST AND INSPECTION DOCUMENTS				Prints	Documents shall be submitted to
Approval/Final documents to be submitted under cover (	of an ADS/FDS f	torm			Distribution Office (WPAI) by Vendor / Sub-contractor
respectively					Within 4 weeks of lest of before final release
,					whichever is sooner.
Man day in a cond to: DED 31 33 10 35 Con				3	
Manufacturing report to: DEP 31.22.10.35-Gen.				L	Note 4: Turn around time at WPAI for each
Abridged manufacturing report to: DEP 31.22.10.35-Ger				3	submission of documents is 15 days or 10 working
Material certificates to ISO 10474: Type 3.1.B & CE mar	king or equivale	:nt		3	days whichever is higher
				ļ	Note 5: ITPs and/or any other documents requiring
					PDO approval as per SP-1122 or any other SPs.
					additional 5 working days or 1 week whichever is
					higher to be added to turnaround time mentioned in
					note 4 above.
					1
				†	-
				+	
				<b>+</b>	4
OPERATING DOCUMENTS					Documents shall be submitted to
Installation instructions				3	Distribution Office (WPAI) by Vendor / Sub-contractor
Operating instructions				3	7
Maintenance instructions				3	1
ADDITIONAL REQUIREMENTS				<u> </u>	
Note 1: If the document is available in electronic form, a	dishatta santair	ning the of	lectronic tile s	hall also	hacubraited
Note 2: The submitted document to be collected byveno					
Note 3: In the absense of ADS or FDS form, vendor ma	y submit the dra	wigns with	h attached Ve	ndor Do	cument Transmittal Form
REMARKS					
Invoice must certify that the drawings and engineering docu	ments specified		Units/dia	mensions	used on Engineering documents shall be SI, Exceptions to SI units
above have been despatched to all parties concerned.			are star	dardized	imperial units for nominal sizes of pipe, valves flanges,
Any deviation from the timing for submittal of documents sha	all be notified to th	he	bolting,	etc.	
Approval/Distribution Offices by E-mail or fax.			The doc	cuments s	hall be in English. Description on drawings and similar documents
Shop tabrication shall not be started before the required app	proval drawings		may be	in other la	anguages provided English translations are also given
have been released for construction by the party concerned	, unless otherwise	е			cuments shall be suiteable for microfilming and comply with
stated on the "Approval Drawing Specification".			- 1		or international slandards for the preparation of technical
Each document shall bear the item/tag and order reference	number, and sha	dl .	drawing	s. Only th	ne following standard sizes should be used: A4, A3, A2 A1
be despatched by air mail unless specified otherwise.			ĺ		
	<del></del>				
			Attach	ment to I	Document: PAIP00405/RQ/401
Ī					

## ATTACHMENT -6 SINGLE LINE DIAGRAM





# ATTACHMENT – 7 VENDOR TRANSMITTAL FORMAT







## Vendor Document Transmittal Form

1. Da	te of Despatch	2. Date of F	Receipt	3. Date of E	Distribu	ition	5. P	PART	6.COMPLETE		
7. WF	PAI Purchase Order Ni	Imber		8, Vendor V	Vork C	order Ref	erence	8a Vendo	l or Transmitta	l Numbe	÷1
9. Na	me of the equipment			<u> </u>							
10. V	endor Name / Address	5				Worley	Parsons A	Approval Office	tries JV		ess
Telep Fax l	act Person: ohone Number; Number: Number:							Al-Khuwair, S Controller <u>(Proj</u>			405)
12. P	urchasing Office Nami Purchase Order	e / Address				Petrole	um Develo	mpany Name / ppment-Oman luscat, Sultana			
14. Item #	15 Supplier Doc / Dwg Number	16. Dwg Rev #	17. Doc / Drawing Des	cription or Title	18 Only as per RED Electr	19 Only as per REC Print	20 Approv	al Office Orawing		21 Rev#	22 Code* Purpose of submission
					-						
JPL 2-700							_				
acci	Additional Remarks by uracy or for the design ) form.	Supplier: Wa , construction	Ining: Approversity and performation	ral of drawings in ance of the equip	n no w	ay absolv / service.	res Vendo Refer do	or from respons cument turnard	sibilities and cound time me	L obligatio ntioned	n for their in the
	Remarks by Distribution in RED form.	on (Approval)	office: The re	quirements for fi	nal dra	ewings ar	Name, S nd the add	ignature and d Iress to which t	ate by Suppl hey should b	ier Repr ie dispa	esentative tched are
" Cod	e for 22: nitted to: comments, B-Submi	tted for Review (	-Submitted for An					Distribution (A			esentative

# ATTACHMENT – 8 SAP PM FORMAT (Shall be provided later)





Client: Petroleum Development Oman LLC (PDO)

Job No.: PAIP00405

Job Title: Nimr Sludge Pits System upgrade - FED & DD

Phase: AFC

Dis	cipline Code: Electrical			C	urrent Revision I	Detail	Ea	rlier Revision D	etail
Item#	Document No	Size	Description:	Rev#	Date:	Status:	Rev#	Date:	Status:
1	NIM-1-2635-400-DQ	A4	Drawing Control Index	A	16-MAY-11	AFC	0	19-SEP-10	IFC
2	NIM-4-2801-001-DQ	ΑI	415V SLD Main Distribution Board (MDB-1)	В	04-JUN-11	AFC	A	16-MAY-11	AFC
							0	19-SEP-10	IFC
3	NIM-4-2815-002-DQ	A3	SLD OF MDB	A	16-MAY-11	AFC			
4	NIM-4-2817-001-DQ	Al	Cable Layout And DB Location	A	16-MAY-11	AFC	0	19-SEP-10	IFC
5	NIM-4-6411-001-DQ	Al	415 V SLD Power Distribution Board (PDB)	В	04-JUN-11	AFC	A	16-MAY-11	AFC
							0	19-SEP-10	IFC
6	NIM-4-6412-001-DQ	A3	Schematic Lighting Diagram	В	04-JUN-11	AFC	A	16-MAY-11	AFC
							0	19-SEP-10	IFC
7	NIM-4-6413-001-DQ	A3	LV Cable Schedule Cover Sheet	В	04-JUN-11	AFC	A	16-MAY-11	AFC
							0	19-SEP-10	IFC
8	NIM-4-6413-002-DQ	A3	LV Cable Schedule Index Sheet	В	04-JUN-11	AFC	A	16-MAY-11	AFC
							0	19-SEP-10	IFC
9	NIM-4-6413-003-DQ	A3	LV Cable Schedule	В	04-JUN-11	AFC	A	16-MAY-11	AFC
							0	19-SEP-10	IFC
10	NIM-4-6415-001-DQ	A1	Overall Cable Route Layout	А	16-MAY-11	AFC	0	19-SEP-10	IFC
I 1	NIM-4-6415-002-DQ	Al	Cable Route Layout at Sludge Pit Area	A	16-MAY-11	AFC	0	19-SEP-10	IFC
12	NIM-4-6416-001-DQ	A 1	Overall Cable Trench Layout	A	16-MAY-11	AFC	0	19-SEP-10	IFC
13	NIM-4-6416-002-DQ	Αi	Cable Trench Layout SWTP	А	16-MAY-11	AFC	0	19-SEP-10	IFC
14	NIM-4-6416-003-DQ	Al	Cable Trench Layout at Sludge Pit Area	А	16-MAY-11	AFC	0	19-SEP-10	IFC
15	NIM-4-6417-001-DQ	Al	Cable Trench Layout Sections	A	16-MAY-11	AFC	0	19-SEP-10	IFC
16	NIM-4-6418-001-DQ	A1	Earthing Layout at Sludge Pit Area	A	16-MAY-11	AFC	0	19-SEP-10	IFC
17	NIM-4-6420-001-DQ	Al	Electrical Control Diagram LV Motors (ABOVE 5.5kW)	A	16-MAY-11	AFC	0	19-SEP-10	IFC
18	NIM-4-6421-001-DQ	A1	Electrical Control Diagram LV Motors (5.5kW & BELOW)	A	16-MAY-11	AFC	0	19-SEP-10	IFC
19	PAIP00405/MTO/401	A4	Electrical Bulk MTO (5 Sheets)	В	20-AUG-11	IFE	0	06-APR-11	IFE
							A	06-APR-11	IFE

# **ELECTRICAL MTO**

Proje	oject Title: Nimr Sludge Pit System Upgrade					PDO	Consignee:	PD0	Engg: WorleyParsons Arabian Industries-JV		
	D-4-	Description	Brongrad	Checked	Appro	ved	Contract No.	Job No.	WBS No.	Revision	
Rev.	Date	Description	Prepared	Checkeu	WPAI	PDO	C-31/0606	PAIP00405	C.OM.NIM.IN.09.011	В	
0	Oct 2010	Issued for Information	Domison	KD	LM	OSE28N			Doc. Title : Ele	ectrical MTO	
A	April 2011	Issued for Enquiry	Κηalid	SCB	LM,	QSE28N			Boc. Title , Electrical WTO		
В	Aug. 2011	Revised & Reissued for Enquiry	DA-	82	Any	RM TH			Document No.	Total Sheets	
			Ā (			0.11.					
-									PAIP00405/MTO/401	5	

#### WorleyParsons Arabian Industries JV Material Take Off

Project Title: Nimr Sludge Pit System Upgrade

Disc:E' MTO Rev # :B

The preliminary material take off (MTO), Bill of Quantities (BOQ) and quantity in BOQ or MTO provided with lender package shall not be considered for cost estimation. The MTO and BOQ provided with tender do not necessarily contain all the ilems or material required to complete the scope. The preliminary material take off (MTO), Bill of Quantities (BOQ) and quantity in BOQ or MTO provided with lender package are prepared prior to freezing the design and are preliminary.

Note 1; All cables should be supplied in single straight length. If this is not possible, prior approval shall be taken from Design Engineer prior to bidding, order placement and manufacturing.

Serial Number	Type	SAP#	MESC#	WPAI Spec #	AVME #	. Description	иом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
1	Power DB					415V, 125A, 3Ph+N, 50Hz, 10kA for 1 Sec. Outdoor Distribution Board	Each	1	Rev. A		PAIP00405/RQ/401
2	Cable: LV	1000047762	68,44,14,459,1		4.15,1	LV Cable: 4Cx240 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	1800	Rev. A		500mts/Drum size
3		<del> </del>			<del> </del>		-			-	Sourits/Drum size
	Cable: LV	1000047757	68.44.14.437.1		4.15.1	LV Cable: 4Cx50 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	50	Rev. A		
4	Cable: LV	1000047742	68,44,14,331.1		4.15.1	LV Cable: 3Cx16 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	350	Rev. A		
5	Cable: LV	1000047754	68.44.14.409.1		4.15.1	LV Cable: 4Cx10 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	1000	Rev. B		
6	Cable: LV	1000069262			4,15.1	LV Cable: 2Cx10 sq.mm, 600/1000V, Flexible PVC Copper cable	Metre	30	Rev. B		
7	Cable: LV	1000071265			4.15.1	LV Cable: 2Cx6 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	300	Rev. A		
8	Cable; LV	1000047763	68.44,14,703.1		4,15,1	LV Cable: 7Cx2.5 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	600	Rev. A		
9	Cable: LV	1000047751	68,44,14,403.1		4.15.1	LV Cable: 4Cx2.5 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	350	Rev. B		
10	Cable: LV	1000047738	68.44.14,303.1		4.15.1	LV Cable: 3Cx2.5 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Metre	100	Rev. A		
11	Cable: LV	100047722			4,15,1	LV Cable: 3Cx2.5 sq.mm, 600/1000V, XLPE/SWB/PVC Copper cable	Metre	225	Rev. A		
12	Cable Joint	1000754004			4,16.1	Cable Jointing Kit suitable for 4Cx240 sq.mm, 600/1000V, XLPE/SWA/PVC Copper cable	Each	5	Rev. B		
13	Cable Gland	1000048326	68,80,58,744.1		4.16.5	Cable Gland suitable for 4CX240 sq.mm Cable (M75)	Each	3	Rev. A		
14	Cable Gland	1000048322	68.80.58.736.1		4,16,5	Cable Gland suitable for 4Cx50 sq.mm Cable (M32)	Each	3	Rev. A		
15	Cable Gland	1000048321	68.80.58.734.1		4.16.5	Cable Gland suitable for 3Cx16 sq.mm Cable (M25)	Each	5	Rev. A		
16	Cable Gland	1000048321	68.80.58.734.1	-	4.16.5	Cable Gland suitable for 4Cx10 sq.mm Cable (M25)	Each	17	Rev. A		
17	Cable Gland	1000048320	68,80,58,732,1		4.16.5	Cable Gland suitable for 2Cx10 sq.mm Cable (M20)	Each	2	Rev. A		
18	Cable Gland	1000048320	68.80.58,732.1		4,16,5	Cable Gland suitable for 2Cx6 sq.mm Cable (M20)	Each	4	Rev. A		
19	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 7Cx2.5 sq.mm Cable (M20)	Each	10	Rev. A		
20	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 4Cx2.5 sq.mm Cable (M20)	Each	18	Rev. A		
21	Cable Gland	1000048320	68.80.58.732.1		4.16.5	Cable Gland suitable for 3Cx2.5 sq.mm Cable (M20)	Each	38	Rev. A		
							-	-			
22	Lock Nut	1000048282	68.80.58.090.9		4.16.5	Lock Nut suitable for M75 Gland	Each	3	Rev. A	ļ	ļ
23	Lock Nul	1000048278	68.80.58.076.9		4.16.5	Lock Nut suitable for M32 Gland	Each	3	Rev. A		
24	Lock Nut	1000048277	68.80.58.072.9		4.16.5	Lock Nut suitable for M25 Gland	Each	22	Rev. A		
25	Lock Nut	1000048276	68.80.58.068.9		4.16.5	Lock Nut suitable for M20 Gland	Each	72	Rev. A		
							-				
26	PVC Shroud	1000048262	68.80.56.924.9		4.16.5	PVC Shroud type-F suitable for M75 Gland	Each	3	Rev. A		

## WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System Upgrade
Disc:El :al
MTO Re. 4:B

Serial Number	Type	SAP#	MESC #	WPAI Spec #	AVME#	Description	пом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
27	PVC Shroud	1000048258	68.80.56.916.9		4.16.5	PVC Shroud type-C suitable for M32 Gland	Each	3	Rev. A		
28	PVC Shroud	1000048257	68.80.56,914,9		4.16.5	PVC Shroud type-B suitable for M25 Gland	Each	22	Rev. A		
29	PVC Shroud	1000048256	68.80.56.912.9		4.16.5	PVC Shroud type-A suitable for M20 Gland	Each	72	Rev. A		
30	Earth Tag	1000255978			4,16.5	Earth Tag suitable for M75 Gland	Each	3	Rev. A		
31	Earth Tag	1000223714	~ ~		4.16.5	Earth Tag suitable for M32 Gland	Each	3	Rev. A		
32	Earth Tag	1000223710			4.16.5	Earth Tag suitable for M25 Gland	Each	22	Rev. A		
33	Earth Tag	1000223708			4.16.5	Earth Tag suitable for M20 Gland	Each	72	Rev. A		
34	Cable Lug	1000048099			4.16.1	Cable Lug suitable for 240 sq.mm Cable	Each	10	Rev. B		
35	Cable Lug	1000048085			4.16.1	Cable Lug suitable for 50 sq.mm Cable	Each	10	Rev. B		
36	Cable Lug	1000048084	~ -		4.16.1	Cable Lug suitable for 16 sq.mm Cable	Each	15	Rev. B		
37	Cable Lug	1000048083			4,16,1	Cable Lug suitable for 10 sq.mm Cable	Each	75	Rev. B		
38	Cable Lug	1000048081			4.16.1	Cable Lug suitable for 6 sq.,mm Cable	Each	20	Rev. B		
39	Cable Lug	1000048080			4,16,1	Cable Lug suitable for 2.5 sq.mm Cable	Each	260	Rev. B		
40	Cable Acces.	1000048555	68.85.12.419.1		4,16,1	Electrical Insulation Tape Yellow, 6 Metre/Roll	Roll	20	Rev. B		
41	Cable Acces.				4.16.1	Pin type terminal blocks & Femules	Pkt	A/R	Rev. B		
42	Trench	1000047983	68.76.81.106.9		4.16.3	Underground Cable Tiles size 1000mm x 240mm x 6mm thick	Each	2700	Rev. A		
43	Trench	1000048548	68.85.12.356.9		4,16.3	Underground Warning Tape 150mm width, 365mts/Roll	Metre	2700	Rev. A		
44	Trench	1000048104	68,79.02.006,9		4,16.3	Plain Lead Strip Underground Cable Nos. 19mm x 1.6mm x 300mm Long, 11 Metre/Roll	Roil	10	Rev. A		
45	Trench	1000075844			4.16.3	LV Cable Roule Marker	Each	25	Rev. A		
46	Trench	1001205594			4.16.3	100mm Dia uPVC Pipe	Metre	60	Rev. A		
47	Trench	1000048206	68.80.50.914.9		4.16.3	150mm Dia uPVC Pipe	Metre	20	Rev. A		
						CABLE MARKER FOR ABOVE GROUND CABLE AS PER (STD-4-0108-001-4-E)					
48	Cable Acces.	1000521146			4.16.3	Cable Tie, Black, Nylon, 368 x 3.6mm	Pocket	2	Rev. A		
49	Cable Acces.	1000535192		1	4.16.3	4mm wide Nylon strapping Heliermann TY4-S1	Pocket	2	Rev. A		
50	Cable Acces.				4.16.3	Arrowtag Hellermann lype AT3	Pocket	A/R	Rev. A		
51	Cable Acces.		17 50		4.16.3	Ovalgrip Marker Hellermann type H085	Pocket	A/R	Rev. A		
52	Cable Tray	1000069935			4.20.5	75mm wide heavy duty return flange G.I. Cable Tray	Melre	25	Rev. A		
53	Cable Tray	1000069990		/	4.20.5	Ventilated cover for 75mm wide Cable Tray	Metre	25	Rev. A		
54	Cable Tray	1000089990			4,20.5	Cable Tie 240mm Length	Pocket	25	Rev. A		
55	Cable Tray	1000223344			4,20.5	Nut, Bolt & Clamps for fixing Trays	Each	A/R	Rev. A		A
56	Other			<u> </u>	4.20.5	G.I. Trunking 75mm x 75mm	Metre	50	Rev. A		

Prepared by.

Checked by.....

...Approved by

## WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System Ungrade Disc:E':al MTO Re., #:B

Serial Number	Type	SAP#	MESC #	WPAI Spec #	AVME#	Description	иом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
57	Other				4.20.5	20x20 Unistrut G.I. Slot Type / 12 Metre Length	Each	A/R	Rev. A		
58	Other				4.20.5	M6x30 Bolt (Bolt Head Half Round)	Each	A/R	Rev. A		
59	Other				4.20.5	M6 Spring Nut	Each	A/R	Rev. A		
60	Olher				4.20.5	M25 PVC Gland	Each	A/R	Rev. A		
61	Earthing	1000047626	68.14.07.382.1		4,17,1	1Cx25 sq.mm Y/G Earth Cable	Metre	425	Rev. B		
62	Earthing	1000047627	68.14.07.392.1		4,17,1	1Cx70 sq.mm Y/G Earth Cable	Metre	1200	Rev. B		
63	Earthing	1000048060	68.78.90.426.1		4,17,1	Branch Connector suitable for 70/70 sq.mm	Each	10	Rev. A		
64	Earthing	1000048059	68.78.90.422.1		4,17,1	Branch Connector suitable for 70/25 sq.mm	Each	65	Rev. A		
65	Earthing	1000780669			4,17,1	Earthing Terminal Lugs 1Cx70 sq.mm Cable (Y/G)	Each	10	Rev. A		
66	Earthing	1000780666			4,17,1	Earthing Terminal Lugs 1Cx25 sq.mm Cable (Y/G)	Each	65	Rev. A		
67	Earthing	1000047994	68.77.02.126.9		4.17.1	Earth Boss	Each	55	Rev. A		
68	Earthing	1000048555	68.85.12.419.1		4.16,1	Electrical Insulation Tape Yellow, 6 Metre/Roll	Roll	2	Rev. A		
						STEEL EARTH PIT AS PER DRG, (STD-4-0310-001-4-F)					
69	Earthing	1000048666	68.89.20,148.9		4,17,1	Earth Inspection Pit, Steel housing & Cover	Each	6	Rev. B		
70	Earthing	1000707169			4.17.1	Extensible earth rod,Dia 15mm x LG 1220mm	Each	72	Rev. B		
71	Earthing	1000707154			4,17,1	Coupling screw,p-bz outer thread for 15mm	Each	66	Rev. B		
72	Earthing	1000707153			4,17,1	Steel driving cap,hardened ,allow	Each	6	Rev. B		
73	Earthing	1000707170			4,17,1	Tips, Hardened steel for 15mm driving tip	Each	6	Rev. B		
74	Earthing	1000047990	68.77.02.078.1		4,17,1	70 sq.mm two way through clamp	Each	6	Rev. B		
75	Earthing	1000048060	68.78.90,426.1		4,17,1	Branch connector 70/70 sq.mm	Each	6	Rev. B		
76	Earthing	1001178461			4,17,1	Marconite	Pocket	24	Rev. B		
						EARTHING BUSBAR AS PER DRG, (STD-4-0303-001-4-D)					
77	Earthing	1000045040	67.28.36.188.1		4,17,1	950mm x 50mm x 10mm thick copper bar	Each	3	Rev. A		·····
78	Earthing	1000062976	81.26.25.112.1		4,17,1	M10 X 100mm Long rawlbolt or equal	Each	6	Rev. A		
79	Earthing	1000062970	81.04.62.188.1		4.17.1	M10 x 40mm Long brass nut and bolt	Each	60	Rev. A		
80	Earthing		81.78.06.160.1		4,17,1	M10 Brass washer	Each	60	Rev. A		
81	Earthing	1000524103	74.13.08.026.1		4,17,1	25mm Dia galvanised line pipe	Metre	1.5	Rev. A		
						EARTHING DETAILS GATE & FENCE AS PER DRG. (STD-4-0306-001-4-D)					
82	Earthing	1000069880	68.01.23.052.9		4,17,1	Flexible Braid Jumper Burndy Type BG-12	Metre	15	Rev. B		
83	Earthing	1000047993	68.77.02.106.9		4,17,1	Burndy Type GK 1826 earth clamp	Each	35	Rev. B		
84	Earthing	1000973324	74.86.05.215.1		4,17,1	25mm Heavy gauge PVC Pipe	Metre	28	Rev. A		
85	Earthing	1000049087	70.32.65.025.1		4,17,1	25mm Saddle	Each	55	Rev. A		
86	Earlhing	1000063796	81.41.17.018.1		4,17,1	M10 Carbon Steel Nut	Each	16	Rev. A		
						EARTHING DETAILS FENCE POST AS PER DRG, (STD-4-0308-001-4-D)					
87	Earthing	1000973325	68.77.02.106.1		4,17,1	Burndy Type GK 1826 earth clamp	Each	35	Rev. B		
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Prepared by Checked by Approved by

`Project N WBS Nun er: PAIP00405

## WorleyParsons Arabian Industries JV <u>Material Take Off</u>

Project Title: Nimr Sludge Pit System L

Disc:Electrical MTO Rev # :B

Serial Number	Type	SAP#	MESC#	WPAI Spec #	AVME #	Description	иом	Total Quantity	Rev#	Additional Qty. to be Procured	Remarks
88	Earthing	1000063796	81,41,17,018,1		4,17,1	M10 Carbon Steel Nut	Each	35	Rev. B		
89	Earthing	1000062587	78.39.10.104.1		4.17.1	12mm Round MS Bar	Metre	35	Rev. B		
90	Junction Box				4.16.6	Electrical Junction Box consists of 8 nos of 240 sq.mm terminal blocks, 8 nos of 50 sq.mm terminal blocks & 1x70 sq.mm + 2x25 sq.mm earth terminal blocks suitable for Hazardous area	Each	1	Rev. A		PAIP00405/RQ/402
91	Junction Box				4.16.6	Electrical Junction Box consists of 8 nos of 10 sq.mm terminal blocks, 8 nos of 2.5 sq.mm terminal blocks & 1x25 sq.mm + 3x2.5 sq.mm earth terminal blocks suitable for Hazardous area	Each	10	Rev. 8		PAIP00405/RQ/402
92	Lighting Pole	1000048607			4.19.9	Flood Lighting Pole as Drg. STD-4-0203-001, 10M, Height Stepped Steel pole	Each	8	Rev. A		
93	Lighting Pole				4,19,5	Lighting Pole Type-5 as Drg. STD-4-0207-002	Each	2	Rev. A		
94	Lighting	1090000515			4.19.9	Flood Light Crossarm for 2-Way flood light bracket as Drg. STD-4-0205-001	Each	8	Rev. A		
95	Lighting	1000326313	69.6122.250,9		4.19.5	250W Floodlight filting complete with control gear and p.f improvement capacitor with H.P. Sodium vapour lamp	Each	16	Rev. A		
96	Lighting	1090003156			4.19.5	2x36W Flourescent Light fittings, EEXe IP-55, normal type, Pole mounted	Each	2	Rev. A		
97	RCU	1000046061	67.92.61.130.1		4.11.3	Remote control unit 50/1A CT Operated 0-30A Ammeter	Each	2	Rev. B		
98	RCU	1000070070	67.92.61.104.1		4,11.3	Remote control unit 5/1A direct Ammeter 0-5A (RCU shall be suitable for 7Cx2.5 sq.mm Incoming cable & 3Cx2.5 sq.mm Outgoing cable) including 2 nos of M20 glands.	Each	2	Rev. A		
						INSTALLATION MATERIALS FOR RCU AS PER DRG STD-4-0109-001-4-D					
99	Access	1000052011	74086.05.345.9		4.20	50mm Heavy Gauge PVC Pipe	Metre	2	Rev. A		
100	Access	1000052014	74.86.05.570.9		4.20	110mm Heavy Gauge PVC Pipe	Metre	2	Rev. A		
101	Access	1000145612	78,47,31,053.1		4.20	100mm x 50mm x 6mm MS Channel	Metre	8	Rev. A		
102	Access	1000542348			4.20	Galvanised Cable Saddle, 20mm DIA	Each	16	Rev. A		
103	Access	1000062976	81,26,25,112,1		4.20	M10 x 100mm Expanding Bolt	Each	8	Rev. A		
104	Access	1000062606	78,43.30,116,1		4.20	6mm MS Plate, size 300mm x 300mm	Each	4	Rev. A		

Prepared by

Checked by.....

Approved by

# ELECTRICAL CABLE SCHEDULE FOR NIMR SLUDGE PITS SYSTEM UPGRADE-FED & DD

NOTES:

APPROVED FOR CONSTRUCTION

- 1. CABLE LENGTH SHOWN ARE ESTIMATED FROM CABLE LAYOUT DRAWINGS.
- 2. ACTUAL ROUTE LENGTHS ARE TO BE VERIFIED AT SITE BEFORE CUTTING THE CABLE.

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	& REFERENCE DRAWINGS			1	MART	ED DD AN	VING REV	ISION:		1 . DO A		4	CABLE SCHEDULE		DRWG	AREA CODE			L NUMBER	SHEET	PROJ CODE	DWG	
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		Description	of cable					Description	of run									
SR. No.	Cable no.	Туре	Length, m	Size, mm2	Volt. grade	From					То				Remark	5		
1	LV-48-6059	XLPE/SWA/PVC/CU	25	4Cx50		EXISTING 415V LY SWITCHBOAR				TIMCION		IB-001		$\triangle$				
2	LV-48-6060	XLPE/SWA/PVC/CU	1800	4Cx240		ELECTRICAL JUNCTION BOX 48-				ON BOARD				/B\				
3	LV-48-6061	XLPE/SWAJPVC/CU	250	3Cx16		DISTRIBUTION BOARD (G6951) FI				UDGE OIL T	RANSFER	PUMP						
4	LV-48-6062	XLPE/SWA/PVC/CU	250	7Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) FI	EEDER-1		RCU (P-483									
5	LV-48-6063	XLPE/SWA/PVC/CU	25	4Cx2.5		DISTRIBUTION BOARD (G6951) FI				START/STO								
6	LV-48-6064	XLPE/SWA/PVC/CU	25	4Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-1		INDICATIO	(RUNNING	/STOPPED	) RTU PAN	1EL					
7	LV-48-6065	XLPE/SWA/PVC/CU	100	3Cx16	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-2		P-48358 SL	UDGE OIL T	RANSFER	PUMP						
8	LV-48-6066	XLPE/SWA/PVC/CU	100	7Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-2		RCU (P-483	58)								
9	LV-48-6067	XLPE/SWA/PVC/CU	25	4Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-2		CONTROL	START/STO	P) RTU PA	NEL						
10	LV-48-6068	XLPE/SWA/PVC/CU	25	4Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-2		INDICATIO	(RUNNING	/STOPPED	) RTU PAN	NEL .					
11	LV-48-6069	XLPE/SWA/PVC/CU	100	7Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-4		RCU (P-483	59)								
12	LV-48-6070	XLPE/SWA/PVC/CU	20	3Cx2.5	600/1000V	RCU (P-48359)			P-48359 OX	YGEN SCA	ENGER D	OSING PU	MP					
13	LV-48-6071	XLPE/SWA/PVC/CU	25	4Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-4		CONTROL	START/STC	P) RTU PA	NEL						
14	LV-48-6072	XLPE/SWA/PVC/CU	25	4Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-4		INDICATIO	N (RUNNING	STOPPED	) RTU PAI	VEL .					
15	LV-48-6073	XLPE/SWA/PVC/CU	100	7Cx2.5	600/1000V	DISTRIBUTION BOARD (G6951) F			RCU (P-483			·						
16	LV-48-6074	XLPE/SWA/PVC/CU	20	3Cx2.5		RCU (P-48360)			`	YGEN SCA	/ENGER D	OSING PU	MP					
17	LV-48-6075	XLPE/SWA/PVC/CU	25	4Cx2.5		DISTRIBUTION-BOARD (G6951) F	EEDER-5			START/STC						<del></del>		
18	LV-48-6076	XLPE/SWA/PVC/CU	25	4Cx2.5		DISTRIBUTION BOARD (G6951) F				N (RUNNING	<u>.</u>	_	JFI					
19	LV-48-6077	XLPE/SWA/PVC/CU	125	2Cx6		DISTRIBUTION BOARD (G6951) E				IC FLOW MI	ETER			****				
20	LV-48-6078	XLPE/SWA/PVC/CU	75	4Cx10		DISTRIBUTION BOARD (G6951) F	<u>v v v</u>			HT POLE (F	<u></u>	$\sim$	$\sim$	1				
21	LV-48-6079	XLPE/SWA/PVC/CU	160	4Cx10		FLOOD LIGHT POLE (FLP-2)		1		HT POLE (F	···			<del>\</del>				
> 22	LV-48-6080	XLPE/SWA/PVC/CU	175	4Cx10		FLOOD LIGHT POLE (FLP-3)				HT POLE (F				<del>/</del> B				
× 23	LV-48-6081	XLPE/SWA/PVC/CU	160	4Cx10		FLOOD LIGHT POLE (FLP-4)			<u> </u>	HT POLE (F				<del>}</del>				
24	LV-48-6082	XLPE/SWA/PVC/CU	250	4Cx10		DISTRIBUTION BOARD (G6951) F	EEDED 1	1		HT POLE (F				)				
25	LV-48-6083	XLPE/SWA/PVC/CU				FLOOD LIGHT POLE (FLP-1)	EEDEK-1	1						<del>)</del>				
26	LV-48-6084	XLPE/SWA/PVC/CU	160	4Cx10						HT POLE (F				<del>}</del> _				
27		XLPE/SWA/PVC/CU	160	4Cx10		FLOOD LIGHT POLE (FLP-8)				HT POLE (F				<del></del>				
28	LV-48-6085 LV-48-6086	XLPE/SWA/PVC/CU	170	4Cx10		FLOOD LIGHT POLE (FLP-7) DISTRIBUTION BOARD (G6951) F	A		FLOOD LIG	HT POLE (F	LP-6)			)				
28	LV-48-6087			2Cx10														
30	LV-40-6067	XLPE/SWA/PVC/CU	125	2Cx6	600/1000V	DISTRIBUTION BOARD (G6951) F	EEDER-1	U/B	CORIOLIS	FLOW METE	:K						~ <del>~~~</del>	
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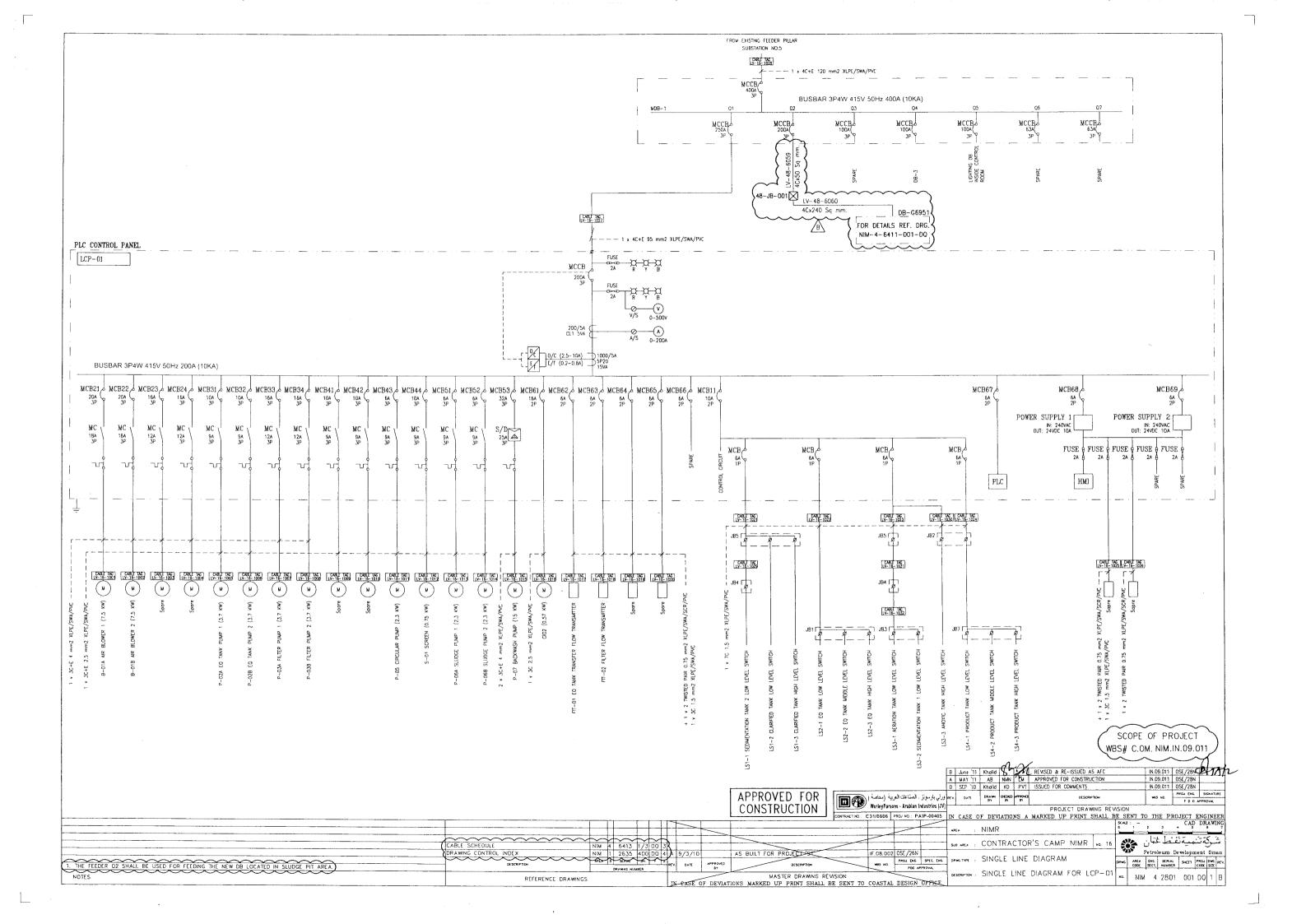
# UTILITY DATA SHEET

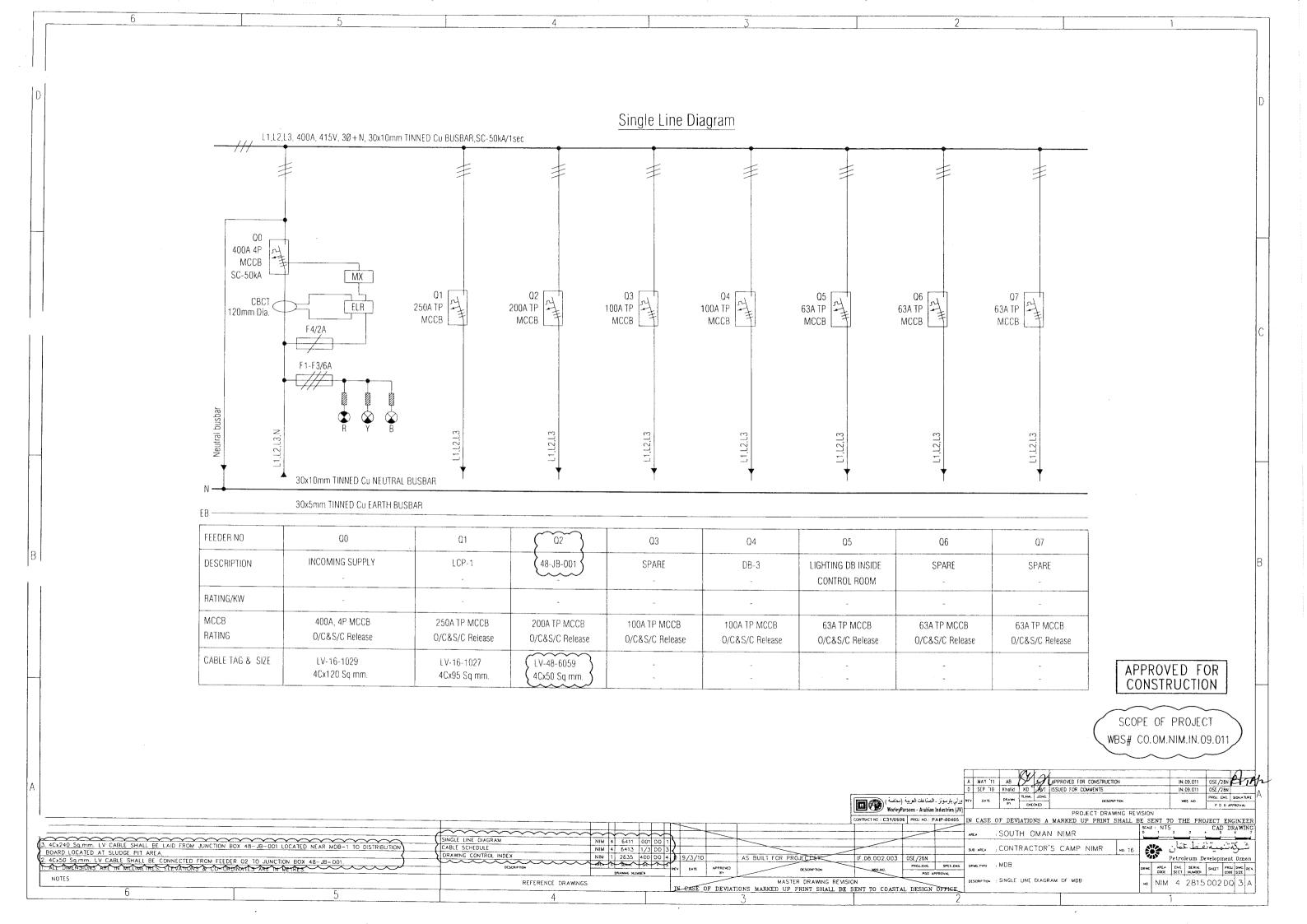
SR.NO.	DESCRIPTION	DRAWING NO.	REV. 0	REV. A	REV. B	REV. C
1	UTILITY DATA SHEET - 415V OUDOOR DISTRIBUTION BOARD (G-6951)	NIM-6419-002	SEP'10	JUNE'11		

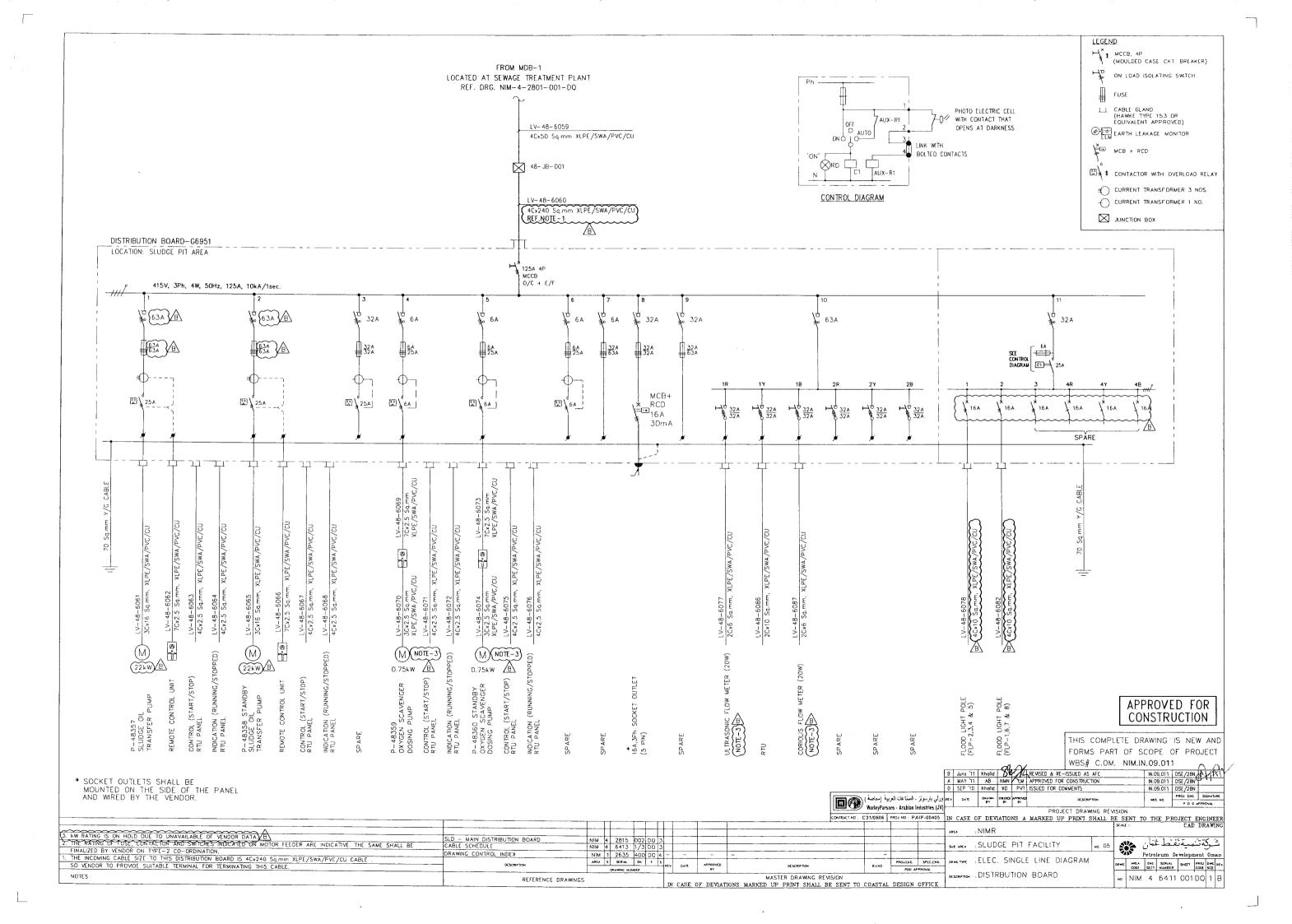
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1. DRAWING CONTROL INDEX  MAR-1-2635-400-DQ	REV	DATE	APPROVED BY	DESCRIPTION	WBS NO.	PROJ.ENGSPEC	VAL DR	WG. TYF	PE: U	TILITY DATA	SHEET	•		AREA	Petrole	eum Develo SERIAL	pment SHEET	Uma   PROJ  I	n DRG   BE
NOTES / REFERENCE DRAWINGS				MASTER DRAWING REVISION				SCRIPTION	-N. U	TILITY DATA	SHEET	FOR 415V LV	DRWG.	CODE	SECT.	NOMBER		CODE .	
IN CASE OF DEVIATION	IS, MARK	KED UP F	PRINT SHALL	BE SENT TO COASTAL DE	SIGN C	OFFICE	וטבי		0	UTDOOR D	В		NO.	NIM	4	6419	001	DQ	A3   A

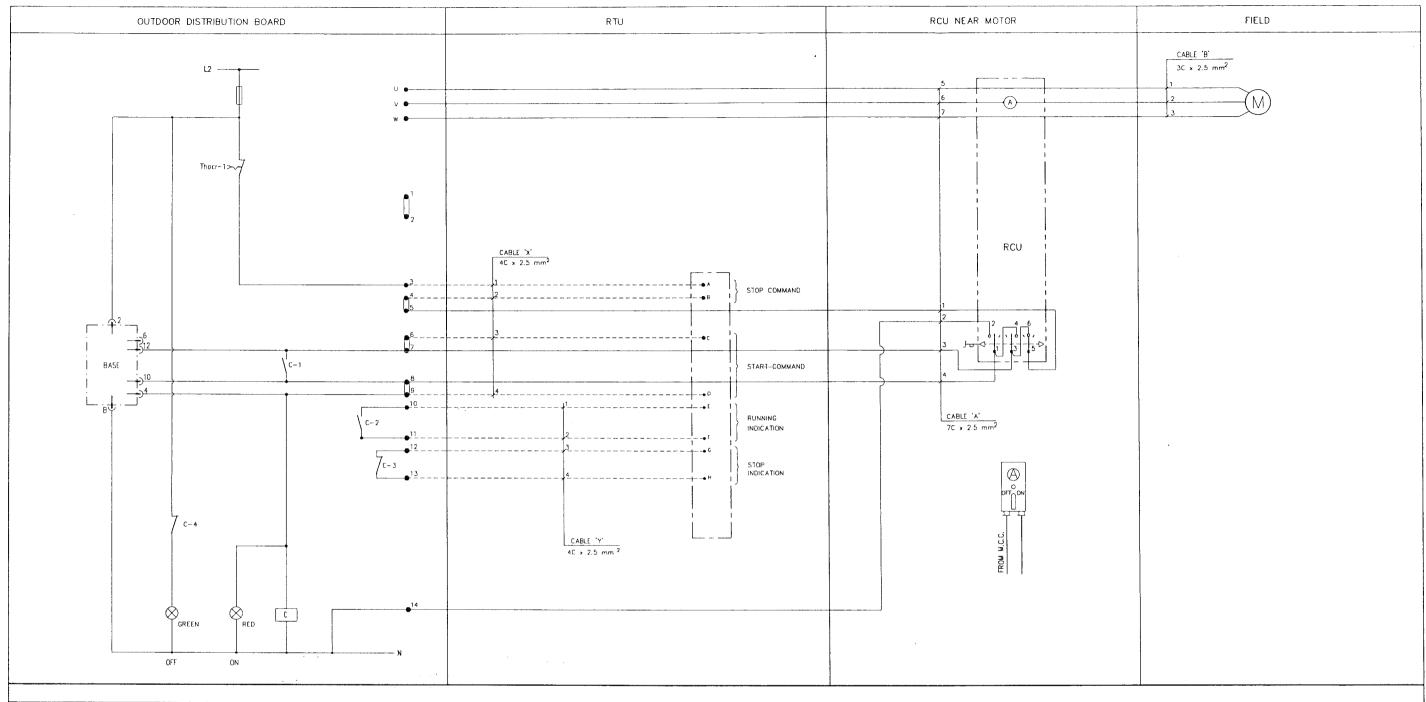
	EQUIPMENT						MOTOR	LOAD	EFFICIENCY	POWER	kW = A/D		CONSUMED	D LOAD	kVAr = kW.	to w	
Equipment				Non	Re-	ABSORBED LOAD	1	FACTOR	at load	FACTOR	,,,,					3 1	REMARKS
No.	Description	Vital	Essentia	1 1	starting		P	= A/B	factor C	at load factor C	Contin	nuous	Interr	mittent	Star	nd-by	
				Titial		kW	kW	in decimals	in decimals	COS φ	kW	kVAr	kW	kVAr	kVV	kVAr	
	OUTDOOR DISTRIBUTION BOARD LOADS (G-6951)								<u> </u>						ļ		
	SLUDGE OIL TRANSFER PUMP FDR#1		E	+		19,80	22.00	0.90	0.88	0.88	22.50	12.14					
	SLUDGE OIL TRANSFER PUMP FDR#2		E			19.80	22.00	0.90	0.88	0.88					22.50	12.14	
P-48359* P-48360*	OXYGEN SCAVENGER PUMP (CHEMICAL INJECTION SKID) OXYGEN SCAVENGER PUMP (CHEMICAL INJECTION SKID)		E	+		0.68	0.75 0.75	0.90 0.90	0.88	0.88	0.77	0.41			0.77	0.41	* KW rating is on hold due to unavailable of vendor data  * KW rating is on hold due to unavailable of vendor data
48-FIA-14141	ULTRASONIC FLOW METER		E			0.02	0.02	1.00	0.95	0.85	0.02	0.01			0.77	0.41	* KW rating is on hold due to unavailable of vendor data
	CORIOLIS FLOW METER IPS PANEL		E			0.02	0.02	1.00	0,95	0.85	0.02	0.01					* KW rating is on hold due to unavailable of vendor data
	3PHS SOCKET OUTLET		E			2.50 3.00	2,50 3,00	1.00	0.95 0.95	0.85 0.85	2.63 3.16	1.63 1.96					
	FLOOD LIGHT POLES		E			4.00	4.00	1.00	0.95	0.85	4.21	2.61					
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Maximum of nor	rmal running plant load:		33.31	l kW: 1	18.78 W/A-	. /1.33.2 -	374 7	38.24 kVA	T				1	T	<u> </u>	T	T
(Est. x%E + y%i	F)		_ 3.0			√κw-+1	vAr=	NVM	TOTAL								Power factor without compensation ( $\cos \phi$ ): 0.87
Peak load (Est. x%E +y%F	= + 7%G)		25.0			[					33.31	<del> </del>	<del>†</del>		1		
(Eou Ave Just	2.00)		35.64	; KVV; 2	20.04 kVAr;	;√kW²+}	(VAr'=	40.88 kVA	$ _{kVA} = \sqrt{kV}$	$V^2 + kVA_1^2$	38.24	-	0.00	0	26.44	4	Power factor with compensation ( $\cos \varphi_1$ ):
Coincidence fac	ctors x, y and z shall be defined for each separate case, subject to Princip	al's approv	val.														Required capacitor rating [= kW (tgφ - tgφ₁)]: kVAr
NOTES a) L	Load classification/restarting:				b)	Observe 11	4			C)	C					<u> </u>	
	For definitions of "Vital", "Essential" and				,	Absorbed loa for pumps, sh		ity point:		C)	Consumed loa E - "Continuou		at may continue	ously be requir	red		
	"Non-Essential" services and application of							ters, communictio	n,					and workshops			
1	Restarling", see DEP 33,64.10.10-Gen.							d load during full	operation of plan	t;	F - "Intermitten		equired for inter	rmediate pump	ping,		
THE AME						for lighting du for workshops		rs; total load in nom	nal full operation		storage, lo G - "Stand-by"		đ in emergenci	ies only, such a	as fire-water		THIS COMPLETE DATA SHEET IS NEW
MA											pumps or thos					tor	AND IS PREPARED FOR
Contract No. C	WorleyParsons-Arabian Industries (JV) C31/0606 Job No. PAIP 00405				Coincidence Fac	tors (needs P	DO's approva	<del>,</del>			normally runnii	ng steam-drive	n ones (e.g ch	narge pumps, b	oiler feed pum		PROJECT 'XX' WBS No. NIM.IN.09.011.
	Nimr Sludge pit system upgrade -FED / DD				Х	<u> </u>	1 y	0.3 Revision letter	Z	0.1	A		T	T .	T	Area	Nimr SWBD: 415V OUDOOR DISTRIBUTION BOARD  DATA - ELECTRICAL
Principal F	Petroleum Development Oman LLC							Date		SEP.'10	JUNE'11						No. C 31/0606
	Petroleum Development Oman LLC Worley Parsons - Arabian Industries (JV)							Signature									.: PAIP00405
	Gen, Sheet 1 of 2, 03/2003											J	1			Drawing N	o.: NIM-4-6419-002 Sheet no. 1 of 1

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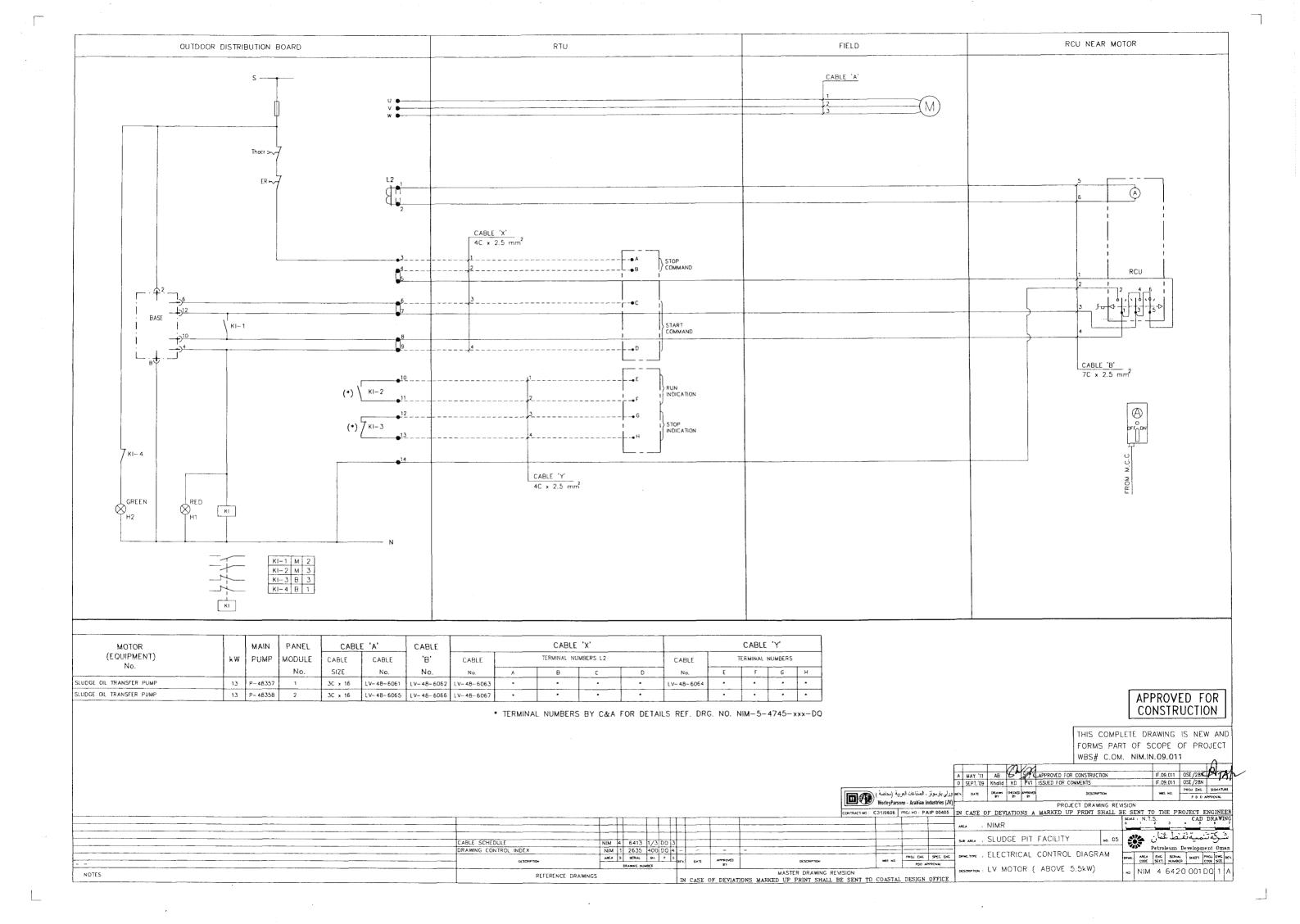
MOTOR		MAIN	PANEL	CABL	E 'A'	CABLE			CABLE	,X,				CABLE	'Y'				
(EQUIPMENT) No.		PUMP	MODULE	MODULE	MODULE	MODULE	CABLE	CABLE	,B,	CABLE		TERMINAL			CABLE		TERMINAL	NUMBERS	
110.			No.	SIZE	No.	No.	No.	A	8	С	D	No.	E	F	G	н			
OXYGEN SCAVENGER DOSING PUMP MOTOR	0.37	P-48359	4	3Cx2.5	LV-48-6069	LV-48-5070	LV-48-6071		•	•		LV-48-6072	•		•				
OXYGEN SCAVENGER DOSING PUMP MOTOR	0.37	P- 48360	5	3Cx2.5	LV-48-6073	LV-48-6074	LV 48 6075			-		LV-48-6076	•						

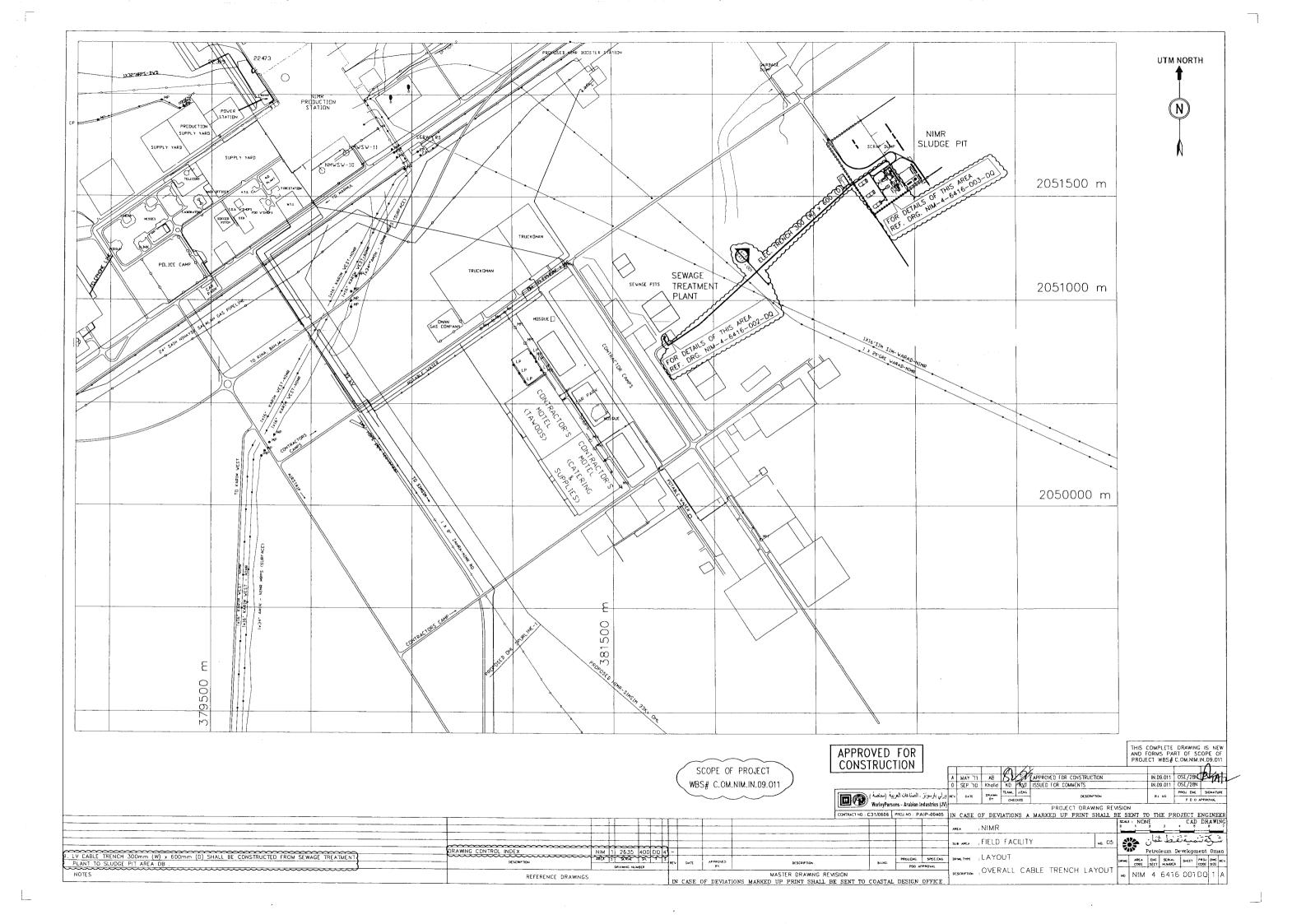
\* TERMINAL NUMBERS BY C&A FOR DETAILS REF. DRG. NO. NIM-5-4745-xxx-DQ

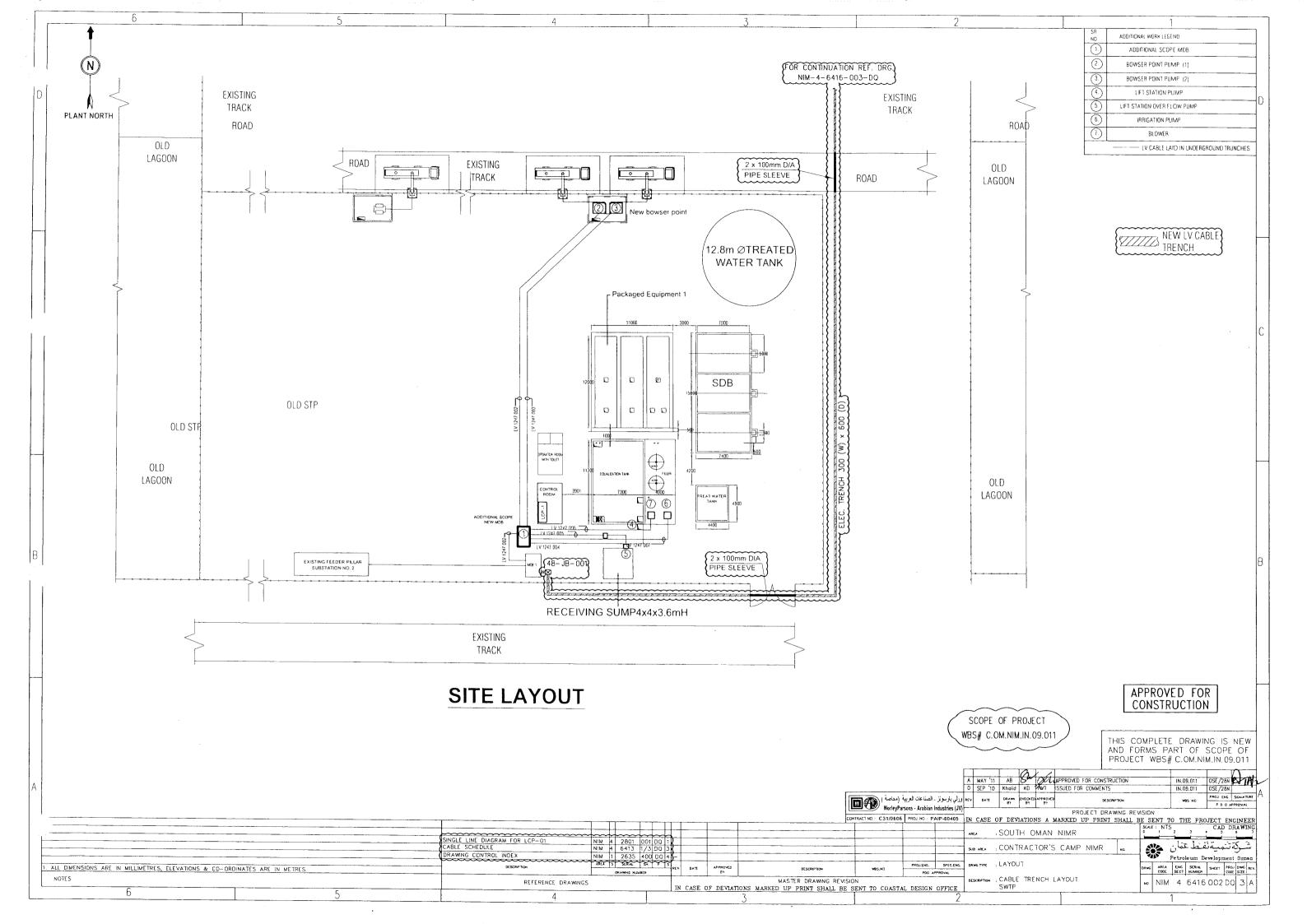
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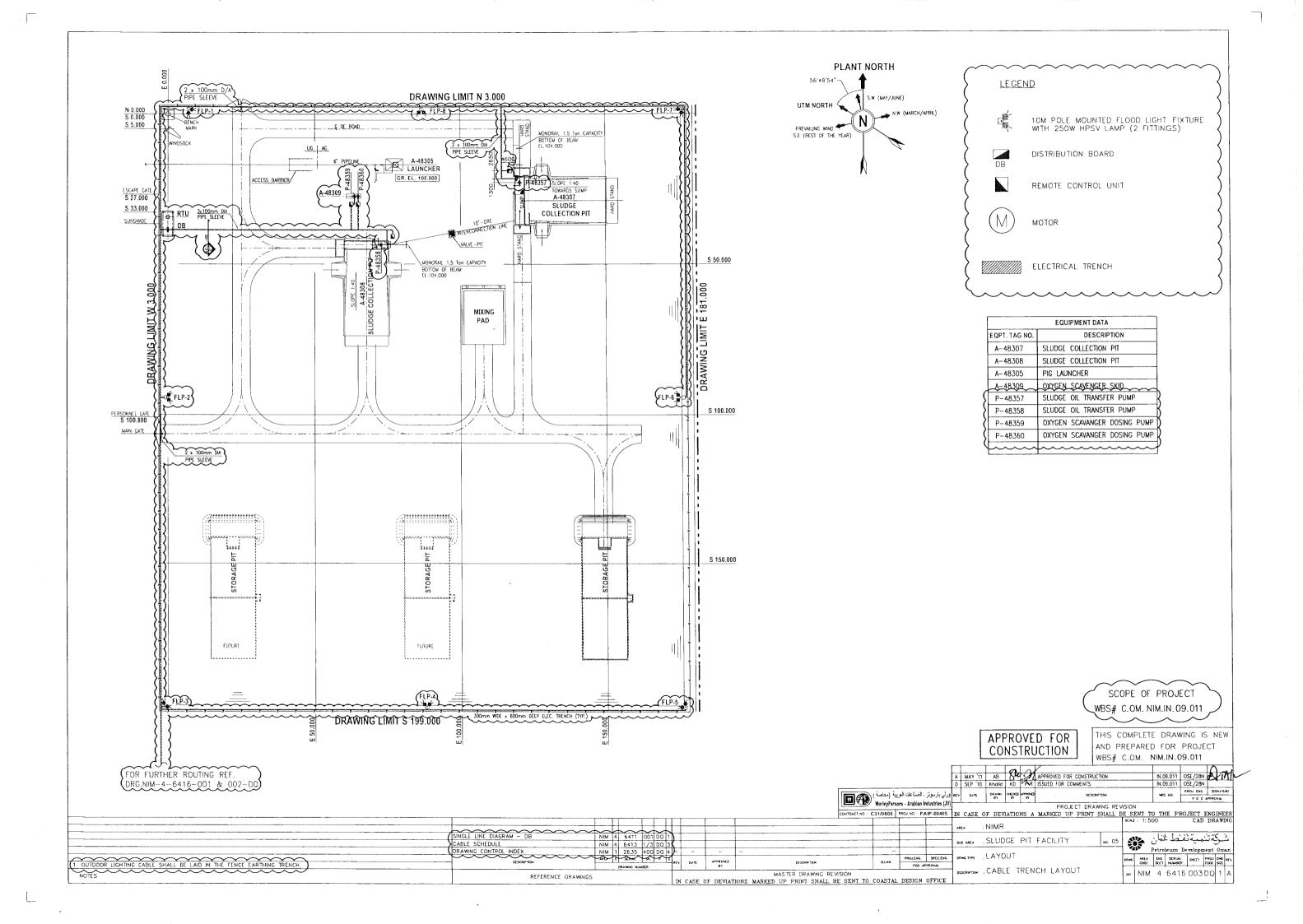
THIS COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT WBS# C.OM. NIM.IN.09.011

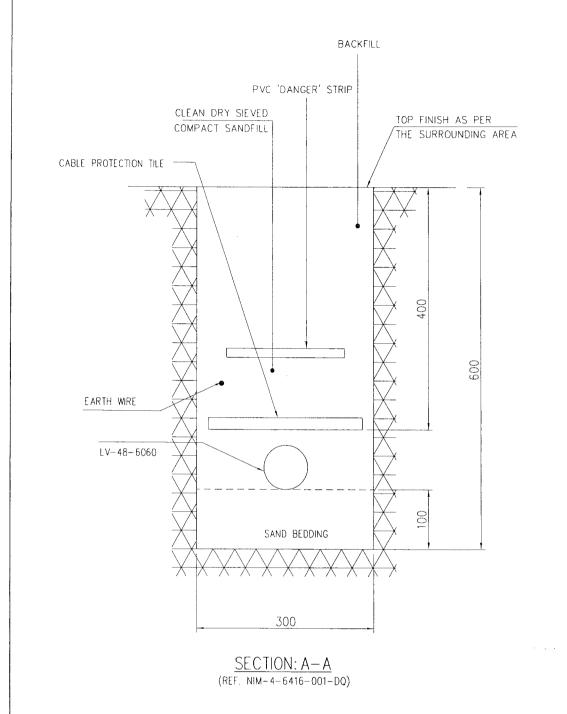
| A MAY '11 AB | MAY '12 AB | MAY '13 AB | MAY '14 AB | MAY '14 AB | MAY '15 AB | MAY '15 AB | MAY '15 AB | MAY '16 AB | MAY '16 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | MAY '17 AB | M

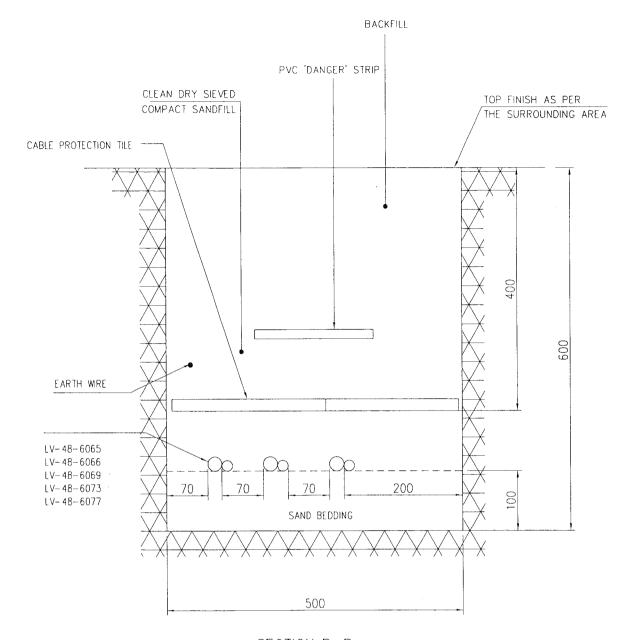










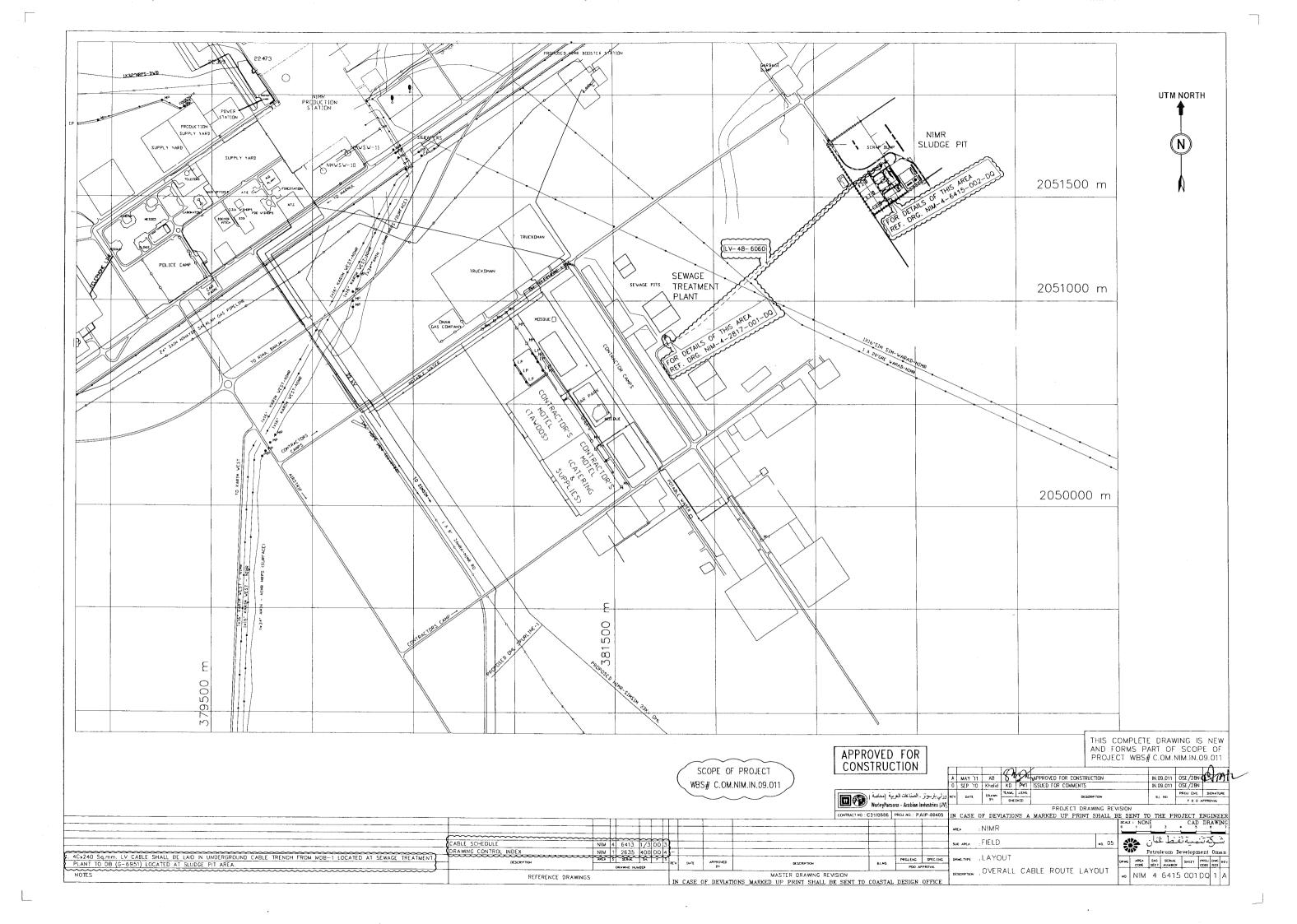


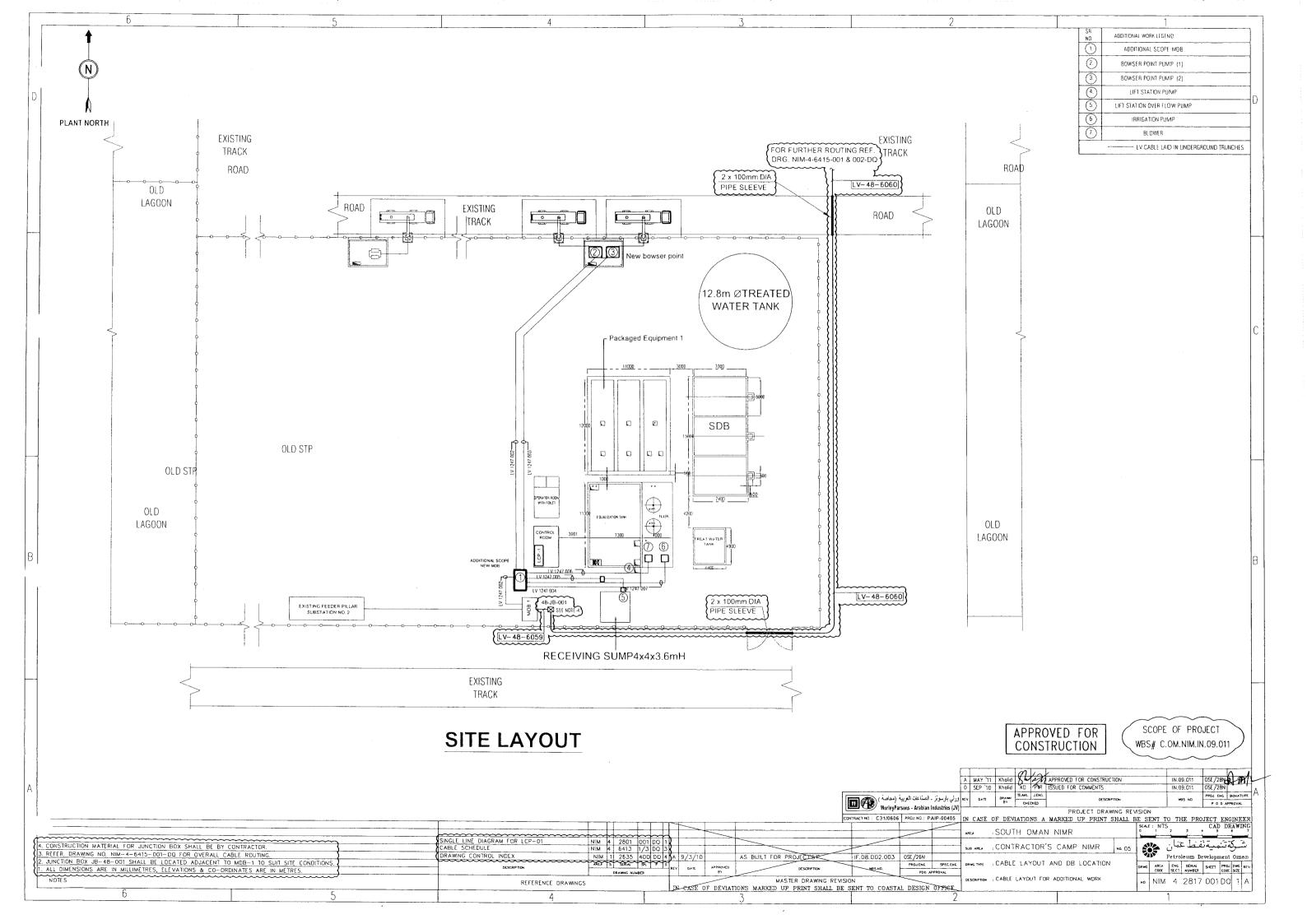
<u>SECTION: B-B</u> (REF. NIM-4-6416-003-D0)

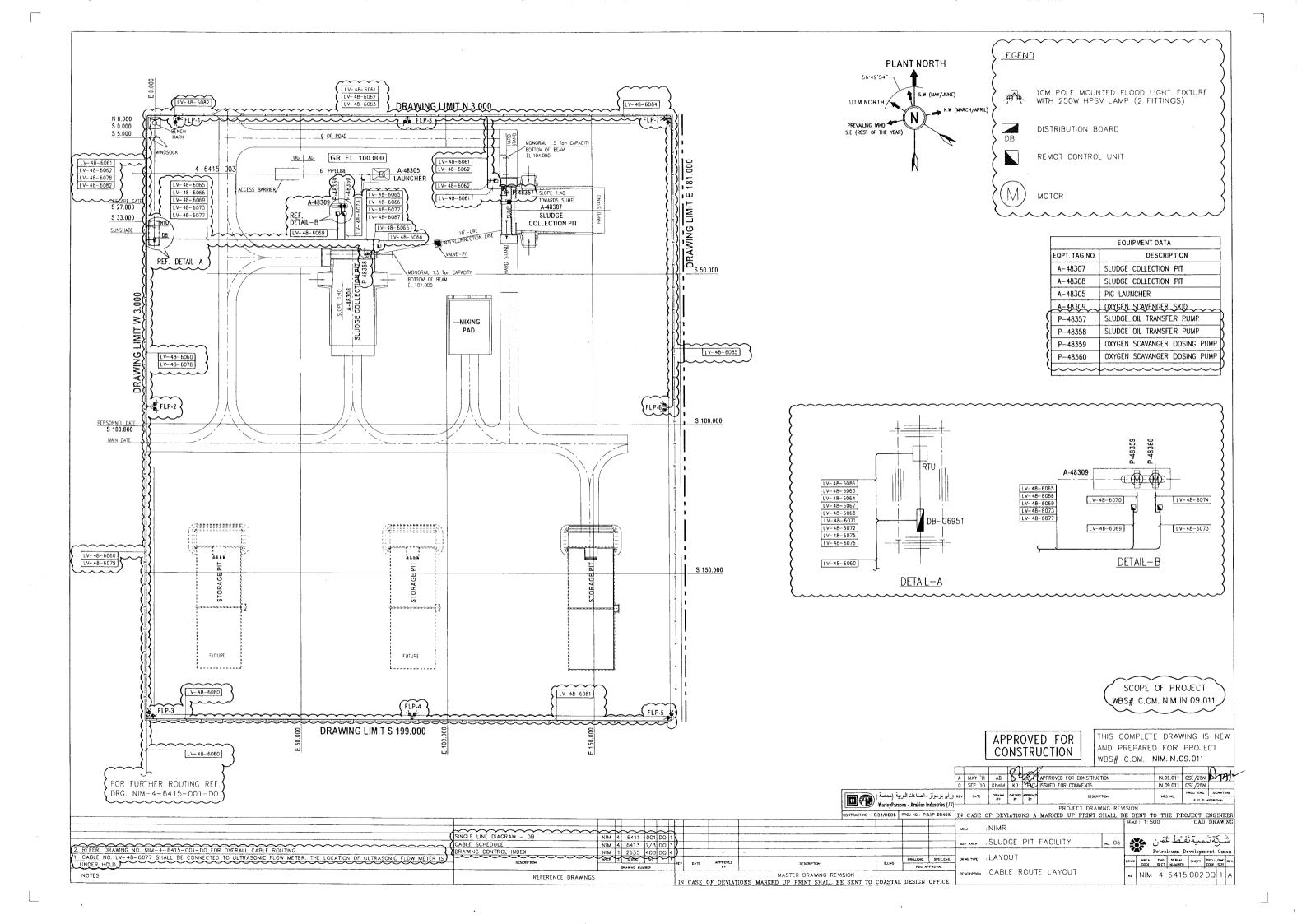
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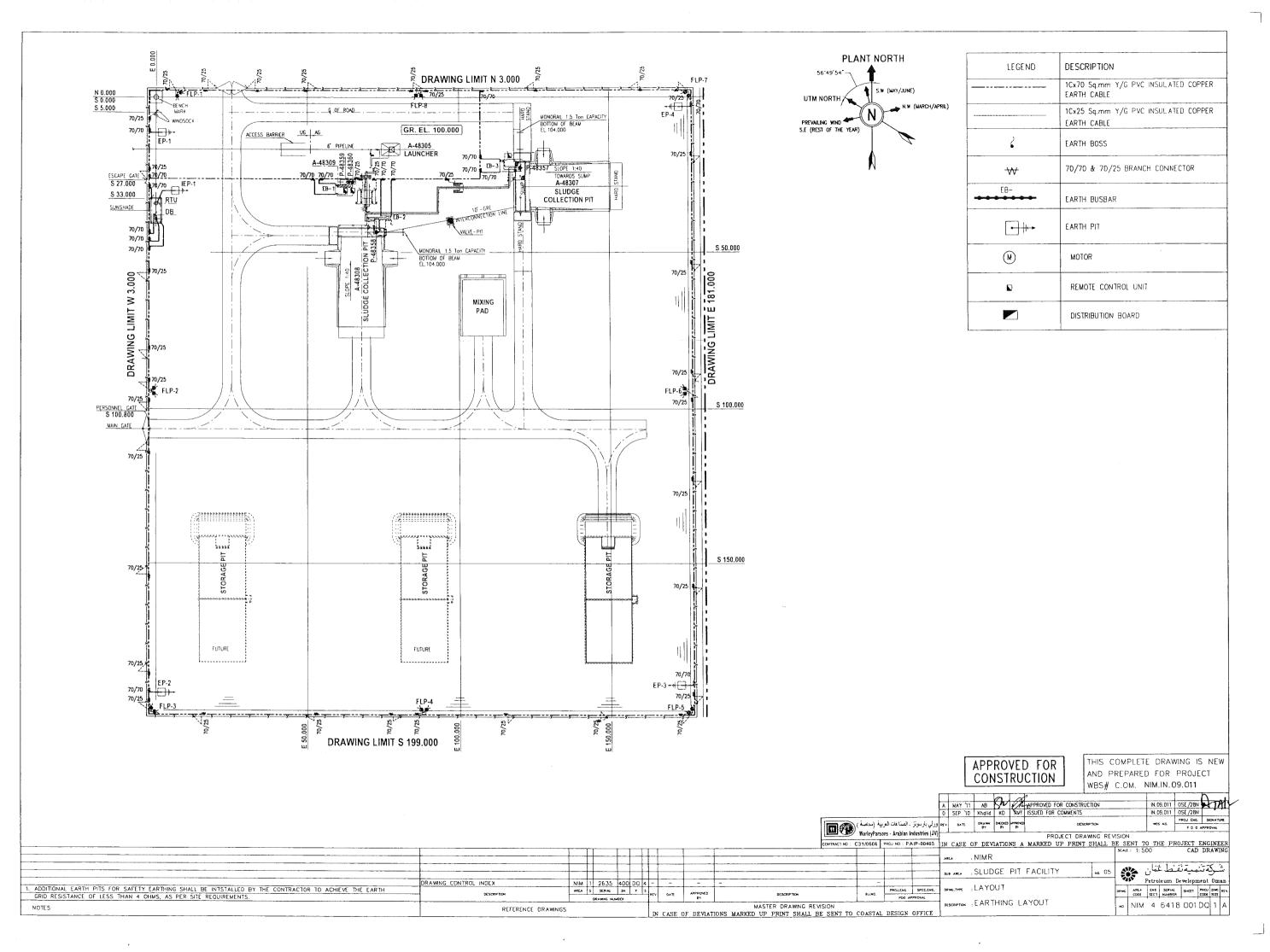
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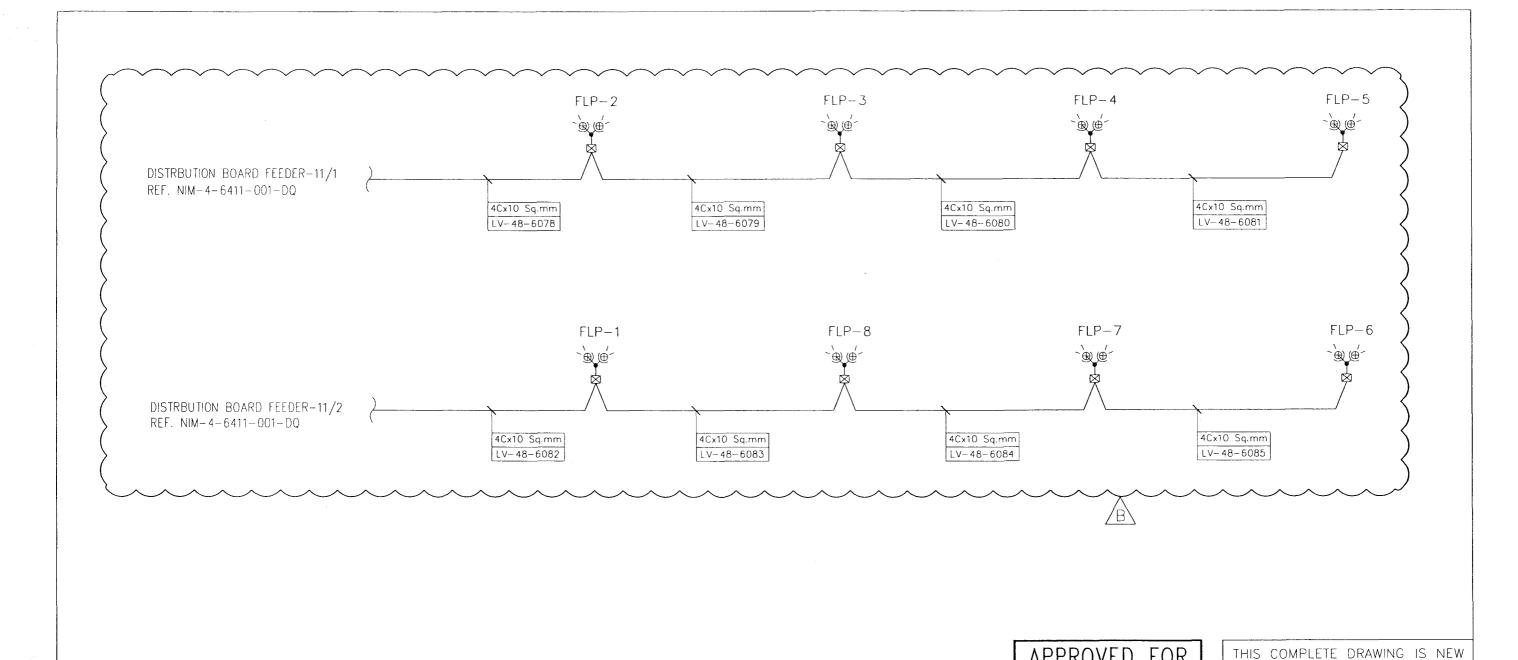
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	DESCRIPTION	t   -	SPL P 5 REV DAT	APPROVED	DESCRIPTION	BING	PROLENG. SPEC.EN	. DAWG TYPE	CABLE TRENCH S	ECTION DETAILS		ENG SERNAL SHE	HEET PROJUNG REV.
	DRAWING CONTROL INDEX	NIM 1 2635	400 DO 4 -						CARLE TRENCH S	COTIONI DETAIL	· ——	Petroleum Devel	lopment Oman
								SUB AREA	SLUDGE PIT FACI	LITTES NO. 0		بالقطاعمان	سريهسمي
									5111005 BIT 5101	LITIE	4970	156 1 257	-75 -
			<del>                                     </del>					AREA	NIMR		<u> </u>	2 3 4	
											SCALE : 1;		CAD DRAWING
						CONTRACT NO . C31/0606	PROJ. NO. PAIP-0040	IN CAS	E OF DEVIATIONS A MARKE			TO THE PROJECT	CT ENGINEER
						WorleyPar	ons - Arabian Industries (	N)	_	PROJECT DRAWING R	EVISION		
						ا معاصه ) (العالم الله WorleyPar	ي بارسونز - الصناعات العرب	J. PEV DAT	DRAWN DHECKED	DESCRIPTION		B.I. NO	P D D APPROVAL
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ITEM

LEGEND

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3. SLD DB NIM-4-6411-001-DO

DRAWING CONTROL INDEX

NIM-1-2635-400-DQ

CABLE SCHEDULE NIM-4-6413-1/3-DQ

NOTES/REFERENCE DRAWINGS

DESCRIPTION

10M POLE MOUNTED FLOOD LIGHT FIXTURE

APPROVED

DESCRIPTION

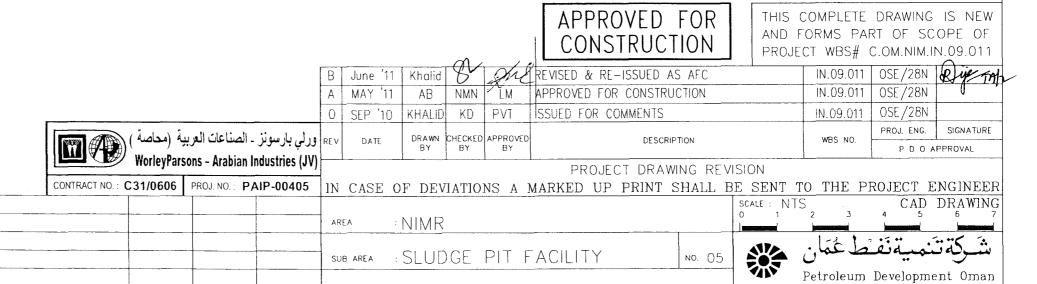
MASTER DRAWING REVISION

IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

DATE

WITH 250W HPSV LAMP (2 FITTINGS)

TYPE: THORN SONPACK 250W HPS. T.



SCHEMATIC DIAGRAM

DESCRIPTION : FLOOD LIGHT POLES

DRWG.TYPE

PROJ.ENG.

SPEC.ENG.

ENG SERIAL SECT NUMBER

NO NIM 4 6412 001 DQ 3 B

SHEET PROJ DWG REV.

Control & Automation Drawings

PAIP00405- Nimr Sludge Pit Up gradation.



Client: Petroleum Development Oman LLC (PDO)

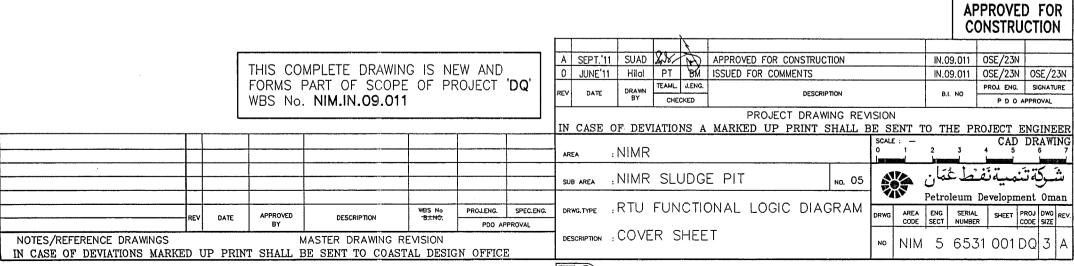
Job No.: PAIP00405

Job Title: Nimr Sludge Pits System upgrade - FED & DD

Phase: AFC

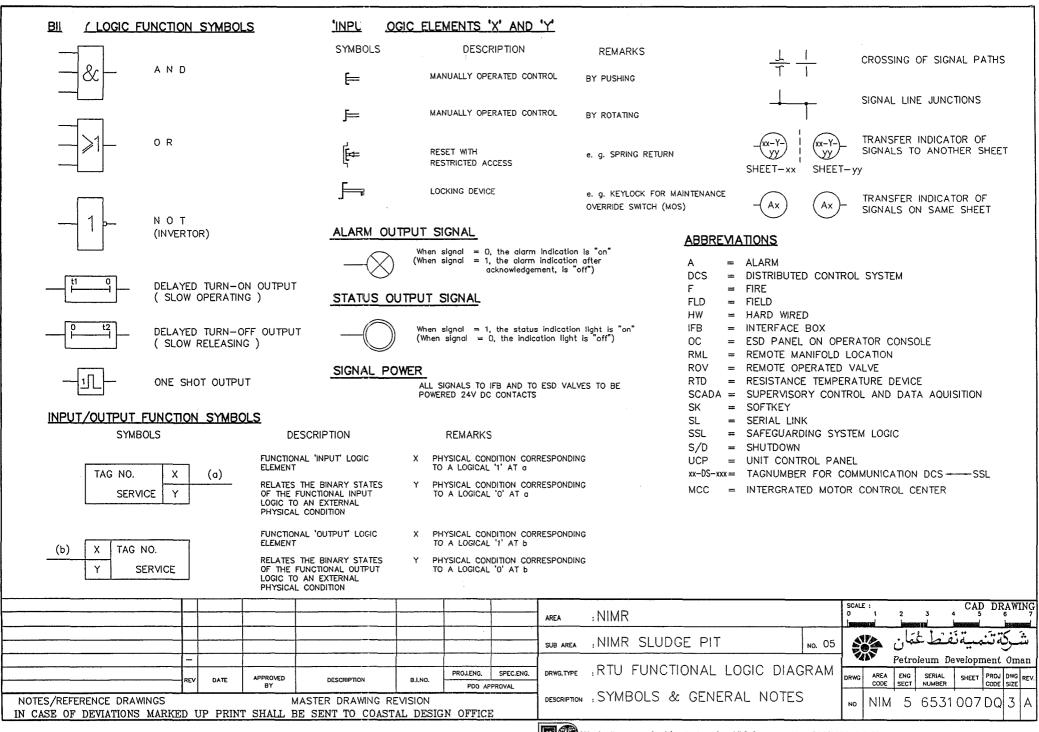
| Dis   | scipline Code: Control & | Automatic | on                                              | Cı   | urrent Revision 1 | Detail  | Earlier Revision Detail |           |      |  |  |  |  |
|-------|--------------------------|-----------|-------------------------------------------------|------|-------------------|---------|-------------------------|-----------|------|--|--|--|--|
| Item# | Document No              | Size      | Description:                                    | Rev# | Date:             | Status: | Rev#                    | Date:     | Stat |  |  |  |  |
| 1     | NIM-5-4745-001-DQ        | A3        | Instrument loop Diagram (37 Sheets)             | A    | 20-SEP-11         | AFC     | 0                       | 31-MAY-11 | IF:  |  |  |  |  |
| 2     | NIM-5-5588-DQ            | A3        | SGS Functional Logic Diagram (9 Sheets)         | A    | 20-SEP-11         | AFC     | 0                       | 08-JUN-11 | IF.  |  |  |  |  |
| 3     | NIM-5-6079-DQ            | A3        | DCS Functional Logic Diagram (6 Sheets)         | A    | 20-SEP-11         | AFC     | 0                       | 08-JUN-11 | IF.  |  |  |  |  |
| 4     | NIM-5-6531-DQ            | A3        | Functional Logic Diagram-Sludge Pit (15 Sheets) | A    | 20-SEP-11         | AFC     | 0                       | 08-JUN-11 | IF   |  |  |  |  |

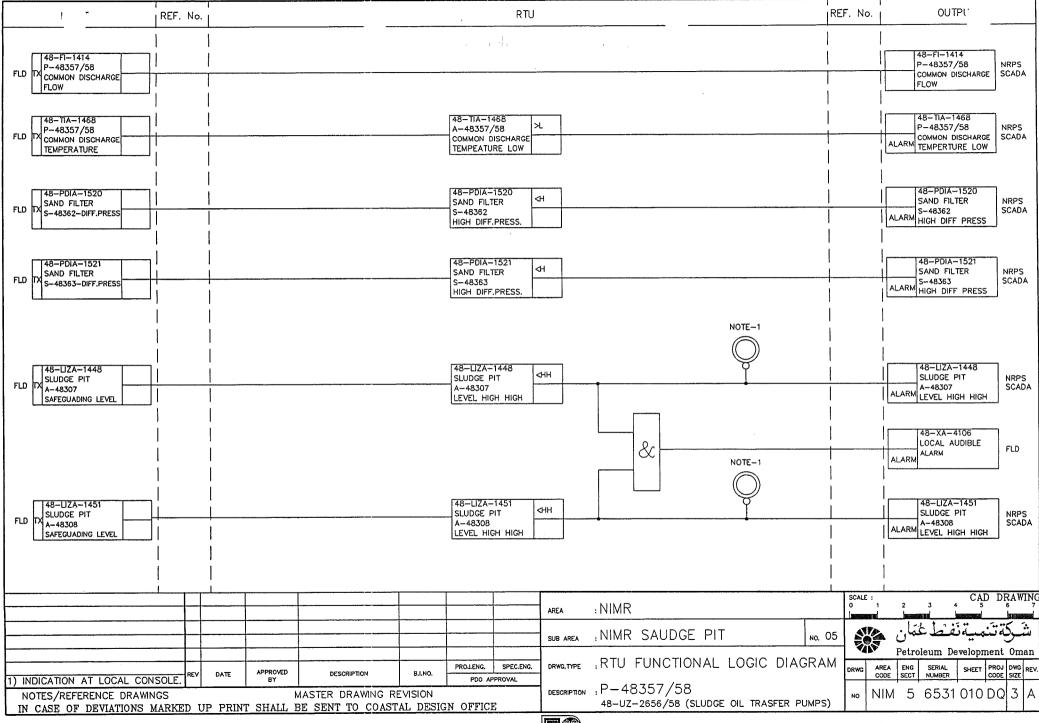
# FUNCTIONAL LOGIC DIAGRAMS NIMR SLUDGE PIT

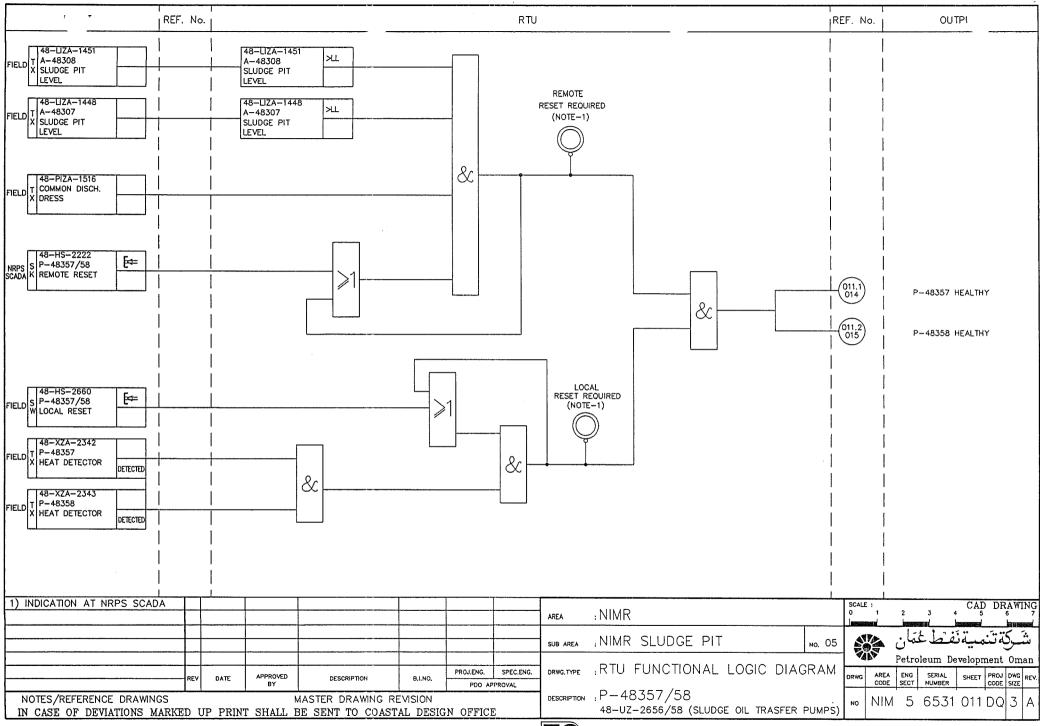


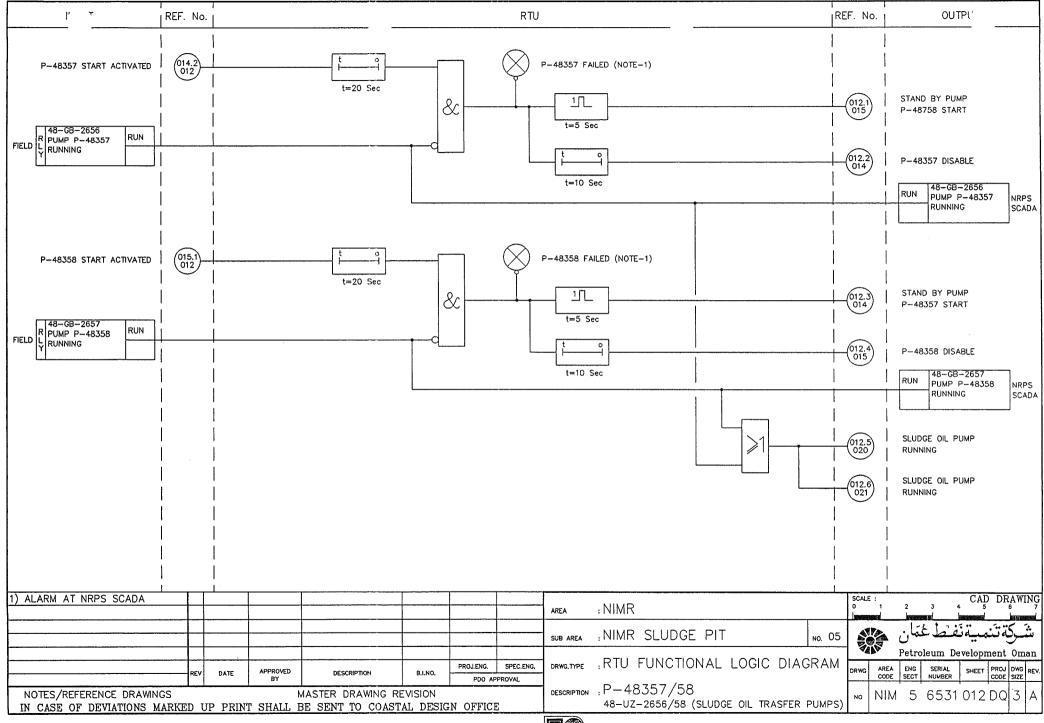
| SHT.No. | DESCRIPTION                                          | REV.0   | REV.A    | REV.B | 'V.C |   | SHT.No. | DESCRIPTIC | REV.0 | REV.A | REV.B | REV.C |   |   |
|---------|------------------------------------------------------|---------|----------|-------|------|---|---------|------------|-------|-------|-------|-------|---|---|
| 001     | CUIL SHEET                                           | JUNE'11 | SEPT.'11 |       |      |   | 037     |            |       |       |       |       |   |   |
| 002     | REVISION/INDEX SHEET                                 | JUNE'11 | SEPT.'11 |       |      |   | 038     |            |       |       |       |       |   |   |
| 003     |                                                      |         |          |       |      |   | 039     |            |       |       |       |       |   |   |
| 004     |                                                      |         |          |       |      |   | 040     |            |       |       |       |       |   |   |
| 005     |                                                      |         |          |       |      |   | 041     |            |       |       |       |       |   |   |
| 006     |                                                      |         |          |       |      |   | 042     |            |       |       |       |       |   |   |
| 007     | SYMBOLS & GENERAL NOTES                              | JUNE'11 | SEPT.'11 |       |      |   | 043     |            |       |       |       |       |   |   |
| 008     | ,                                                    |         |          |       |      |   | 044     |            |       |       |       |       |   |   |
| 009     |                                                      |         |          |       |      |   | 045     |            |       |       |       |       |   |   |
| 010     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUMPS P-48357/58  | JUNE'11 | SEPT.'11 |       |      |   | 046     |            |       |       |       |       |   | i |
| 011     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUNPS P-48357/58  | JUNE'11 | SEPT.'11 |       |      |   | 047     |            |       |       |       |       |   |   |
| 012     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUMPS P-48357/58  | JUNE'11 | SEPT.'11 |       |      |   | 048     |            |       |       |       |       |   | , |
| 013     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUNIPS P-48357/58 | JUNE'11 | SEPT.'11 |       |      |   | 049     |            |       |       |       |       | i |   |
| 014     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUMPS P-48357/58  | JUNE'11 | SEPT.'11 |       |      |   | 050     |            |       |       |       |       |   |   |
| 015     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUMPS P-48357/58  | JUNE'11 | SEPT.'11 |       |      |   | 051     |            |       |       |       |       |   | 1 |
| 016     | 48-UZ-2656/58: SLUDGE OIL TRANSFER PUMPS P-48357/58  | JUNE'11 | SEPT.'11 |       |      |   | 052     |            |       |       |       |       |   |   |
|         | SPARE                                                |         |          |       |      |   | 053     |            |       |       |       |       |   |   |
| 018     | 48-UZ-2657: DXYCEN SCAVANCER DOSING PUMPS P-48359/60 | JUNE'11 | SEPT.'11 |       |      |   | 054     |            |       |       | 1     |       |   |   |
| 019     | 48-UZ-2657: OXYGEN SCAVANGER DOSING PUMPS P-48359/60 | JUNE'11 | SEPT.'11 |       |      |   | 055     |            |       |       |       |       |   | i |
| 020     | 48-UZ-2657: OXYGEN SCAVANGER DOSING PUMPS P-48359/60 | JUNE'11 | SEPT.'11 |       |      |   | 056     |            |       |       |       |       |   |   |
| 021     | 48-UZ-2657: OXYGEN SCAVANGER DOSING PUMPS P-48359/60 | JUNE'11 | SEPT.'11 |       |      |   | 057     |            |       |       |       |       |   |   |
| 022     | 48-UZ-2657: OXYGEN SCAVANCER DOSING PUMPS P-48359/60 | JUNE'11 | SEPT.'11 |       |      |   | 058     | ·          |       |       |       |       |   |   |
| 023     |                                                      |         |          |       |      |   | 059     |            |       |       |       |       |   |   |
| 024     |                                                      |         |          |       |      |   | 060     |            |       |       |       |       |   |   |
| 025     |                                                      |         |          |       |      |   | 061     |            |       |       |       |       |   |   |
| 026     |                                                      |         |          |       |      |   | 062     |            |       |       |       |       |   |   |
| 027     |                                                      |         |          |       |      |   | 063     |            |       |       |       |       |   |   |
| 028     |                                                      |         |          |       |      |   | 064     |            |       |       |       |       |   |   |
| 029     |                                                      |         |          |       |      |   | 065     |            |       |       |       |       |   |   |
| 030     |                                                      |         |          |       |      |   | 066     |            |       |       |       |       |   |   |
| 031     |                                                      |         |          |       |      |   | 067     |            |       |       |       |       |   |   |
| 032     |                                                      |         |          |       |      |   | 068     |            |       |       |       |       |   |   |
| 033     |                                                      |         |          |       |      |   | 069     |            |       |       |       |       |   |   |
| 034     |                                                      |         |          |       |      |   | 070     |            |       |       |       |       |   |   |
| 035     |                                                      |         |          |       |      |   | 071     |            |       |       |       |       |   |   |
| 036     |                                                      |         |          |       |      |   | 072     |            |       |       |       |       |   |   |
|         |                                                      |         | ,        |       | -    | · | ·       |            |       | ·     |       | ·     |   | - |

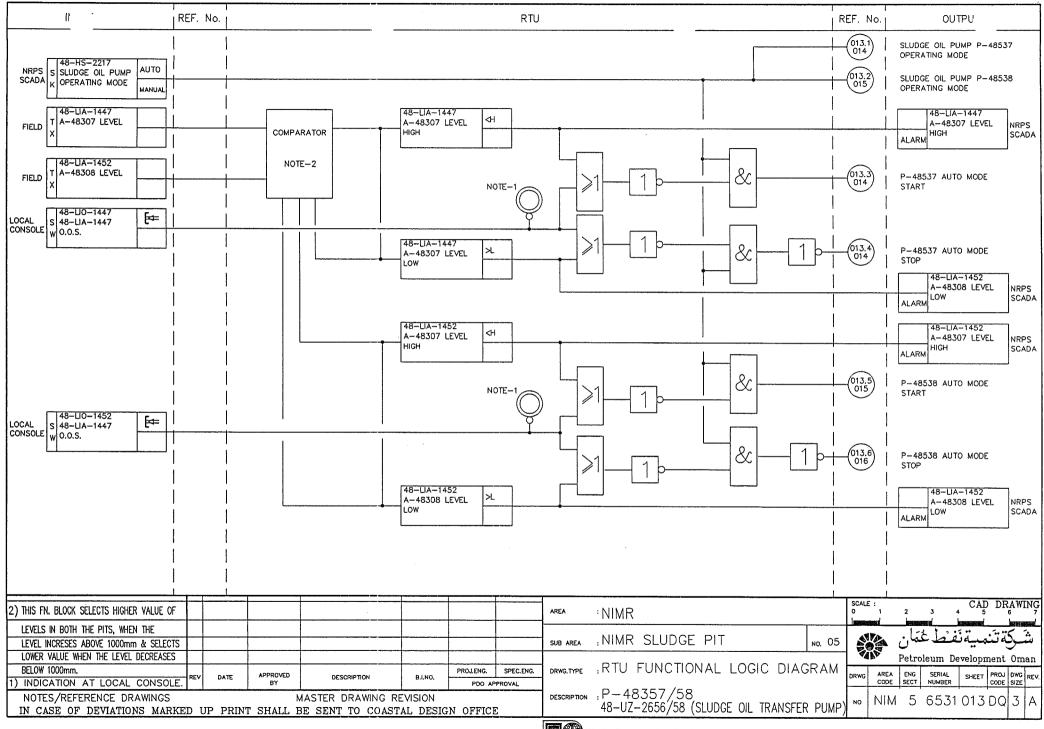
|                              |     |       |          |                 |            |           |           | AREA        | :NIMR                       |    | SCALE :<br>0 1 | 2 3         | CAD DRAWING         |
|------------------------------|-----|-------|----------|-----------------|------------|-----------|-----------|-------------|-----------------------------|----|----------------|-------------|---------------------|
|                              |     |       |          |                 |            |           |           | SUB AREA    | NIMR SLUDGE PIT NO.         | 05 |                | فنط عُمَان  | شكة تنمية ن         |
|                              |     |       |          |                 |            |           |           |             | DTU FUNCTIONAL LOOK DIAGO   |    | 412            | Petroleum D | evelopment Oman     |
|                              | REV | DATE  | APPROVED | DESCRIPTION     | WBS No     | PROJ.ENG. | SPEC.ENG. | DRWG.TYPE   | RTU FUNCTIONAL LOGIC DIAGRA | AM | RWG AREA       |             | SHEET PROJ DWG REV. |
|                              |     |       | BY       |                 |            | PDO AP    | PROVAL    |             | :REVISION/INDEX SHEET       | ⊢  |                |             | 1                   |
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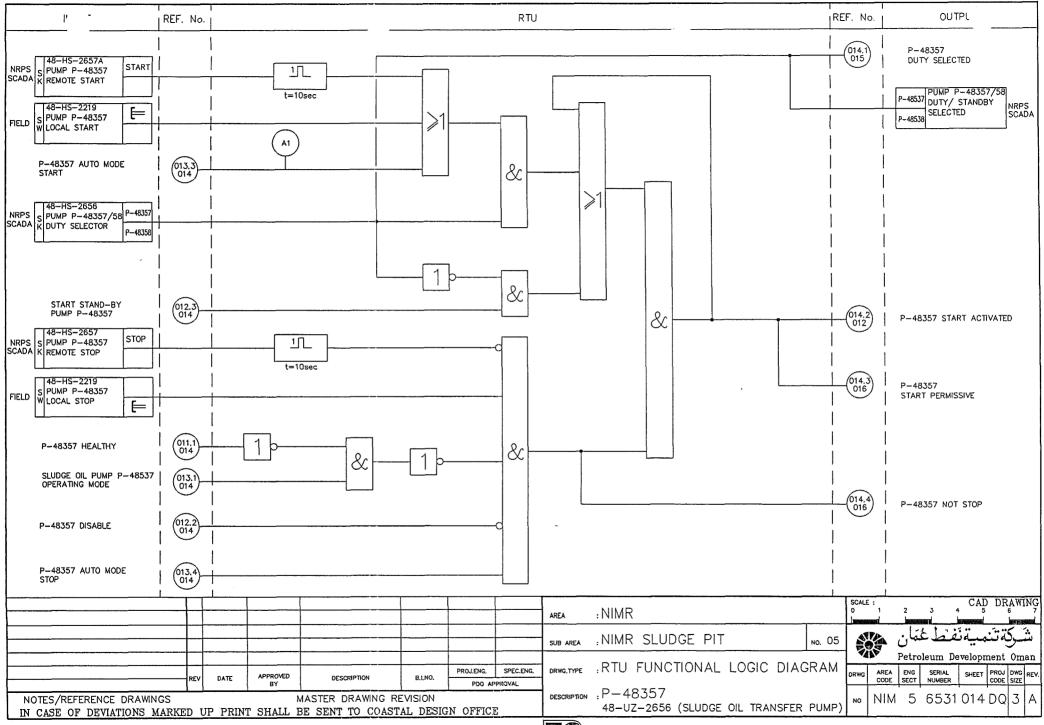


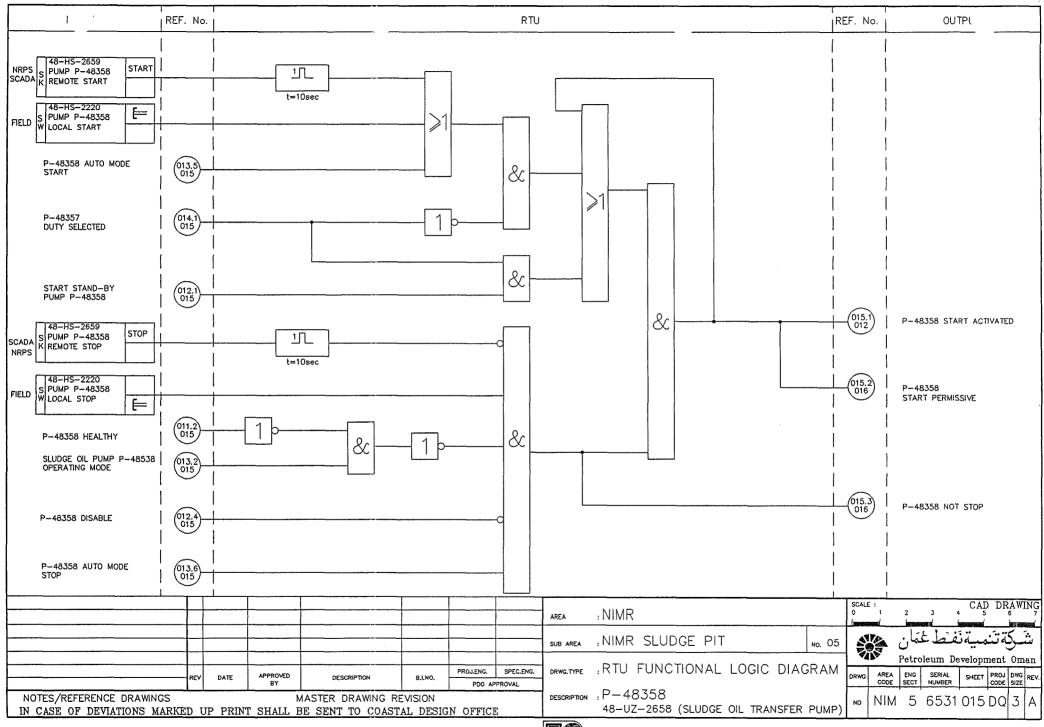


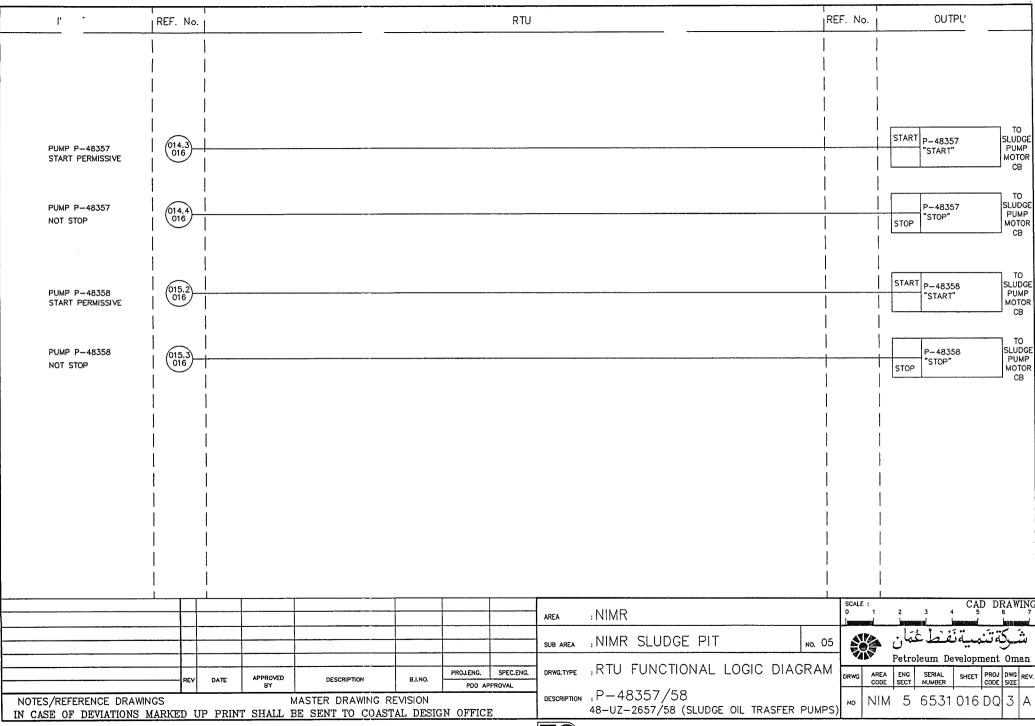


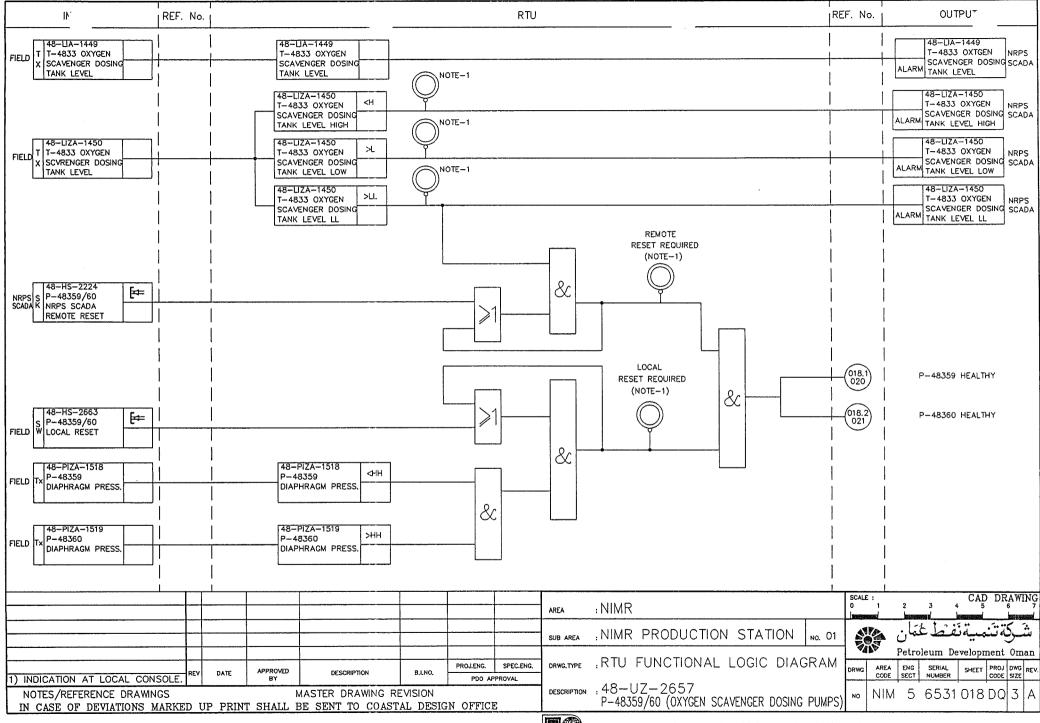


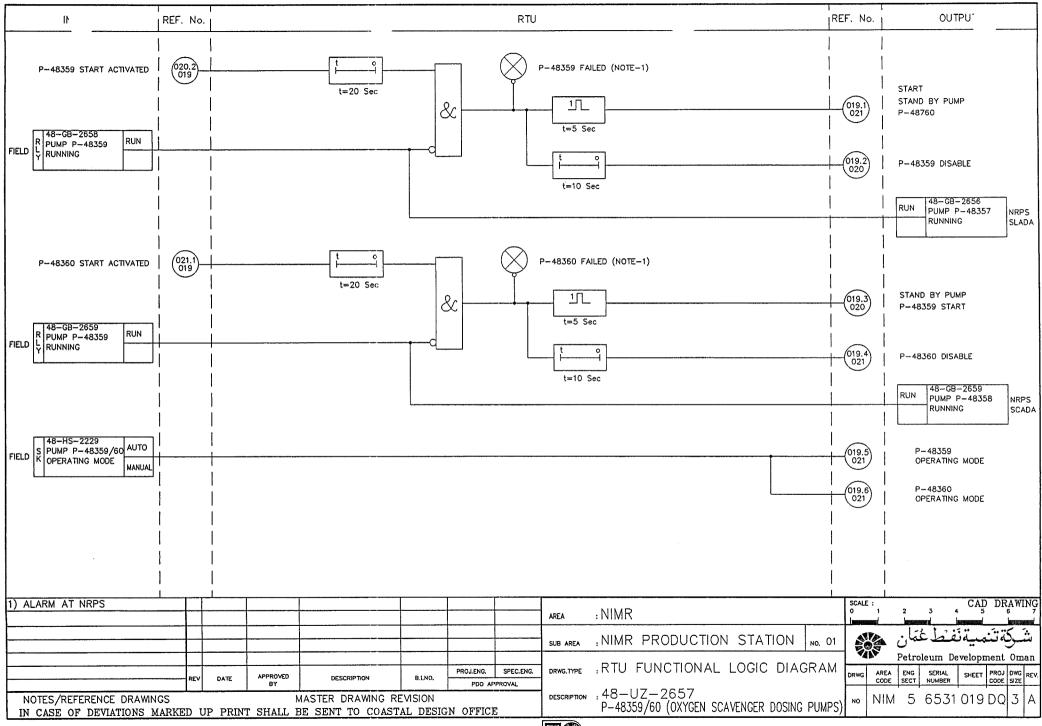


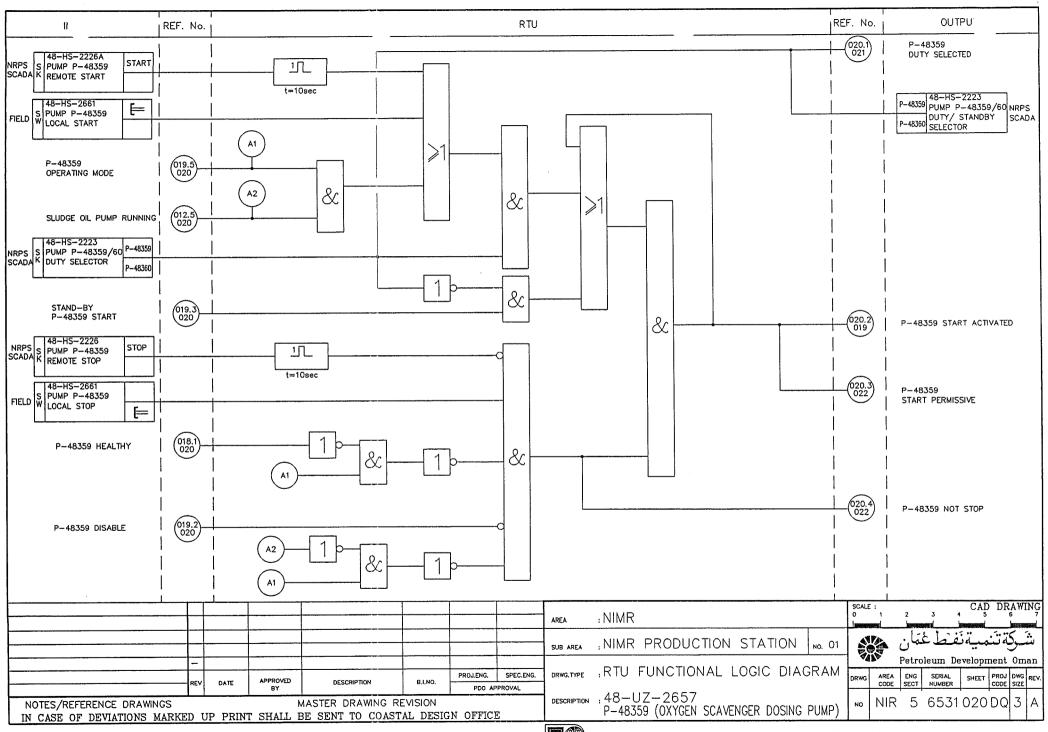


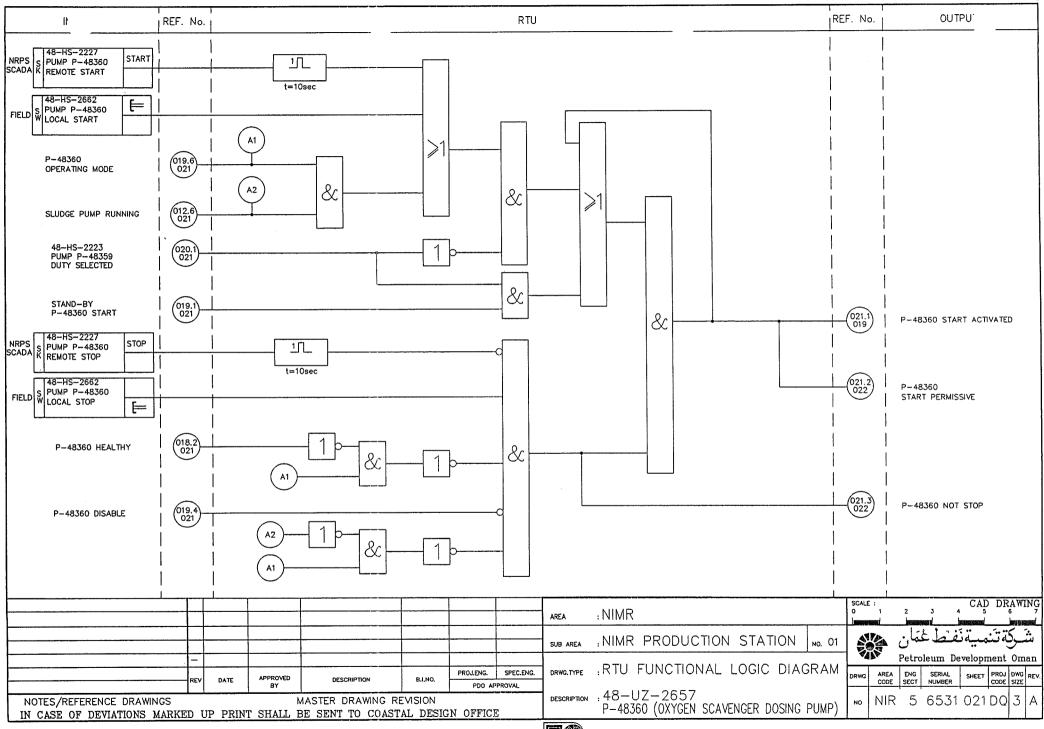


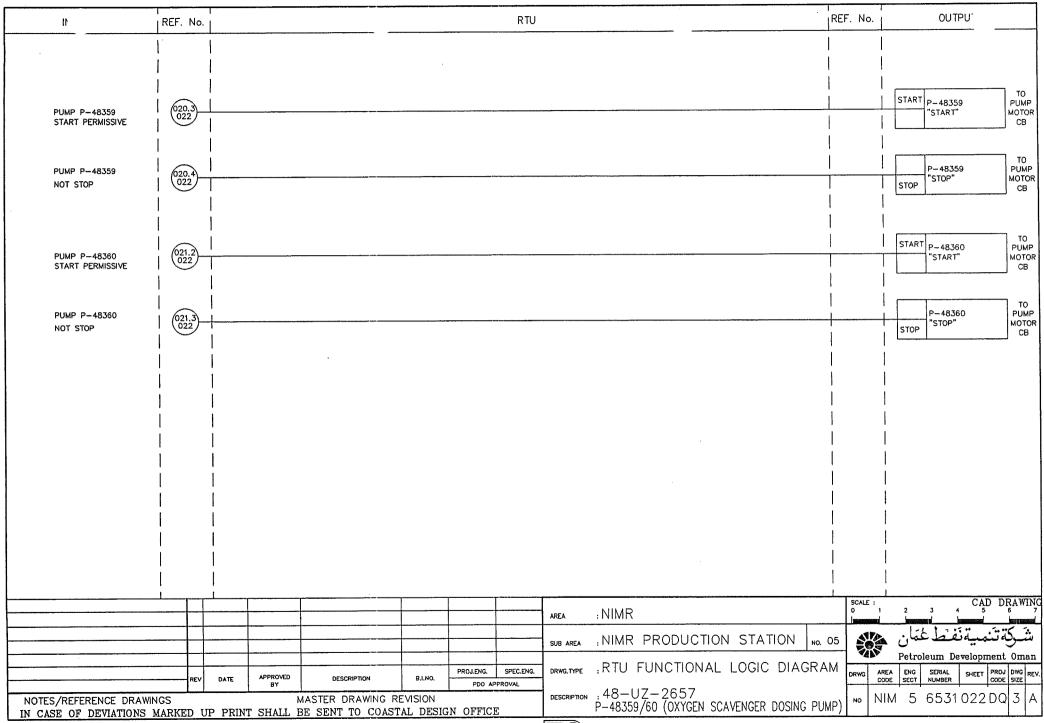












# FUNCTIONAL LOGIC DIAGRAMS PRODUCTION STATION"

#### NOTES -

- 1) SERIAL LINK SIGNALS FROM THE SGS WHICH REQUIRE NO FUNCTIONAL LOGIC IN THE DCS ARE NOT SHOWN IN DCS FLD'S. SEE SGS FLD'S NIM-5-6080 FOR FULL SIGNAL DETAIL.
- 2) THESE FLD'S ONLY SHOW SCADA CONNECTIONS WHERE THESE ARE RELATED TO FUNCTIONAL LOGIC WITHIN THE DCS. SEE DOCUMENT No. NIM-5-5606-001- TELEMETRY POINT LIST.

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

### APPROVED FOR CONSTRUCTION

|     | DAIL     | BY    | CHE    | CKED   | DESCRIPTION               | B.I. 140  | PDOA       | PPROVAL   |
|-----|----------|-------|--------|--------|---------------------------|-----------|------------|-----------|
| REV | DATE     | DRAWN | TEAML. | J.ENG. | DESCRIPTION               | B.I. NO   | PROJ. ENG. | SIGNATURE |
| 0   | JAN. 11  | Мгр   | SG     | (g)    | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    |           |
| Α   | SEPT.'11 | SUAD  | ZW.    | 12     | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    |           |
|     |          |       | نصا    |        |                           |           |            |           |

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

: NIMR .PRODUCTION STATION

DCS FUNCTIONAL LOGIC DIAGRAM

DESCRIPTION : COVER SHEET

AREA ENG SECT SERIAL NUMBER

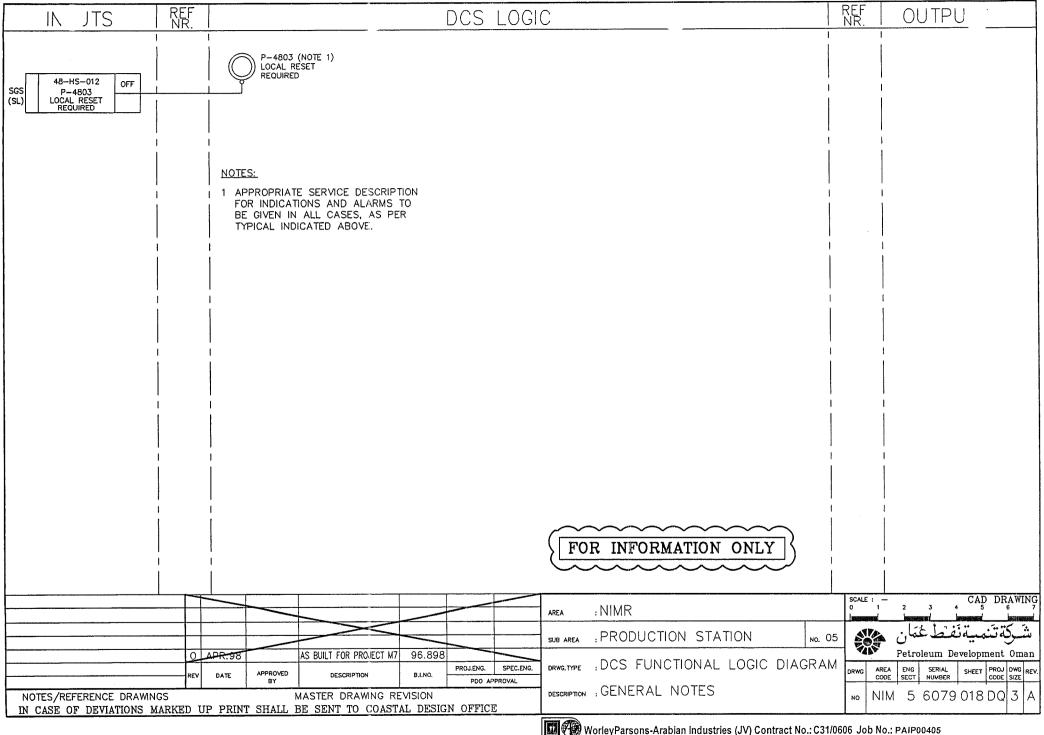
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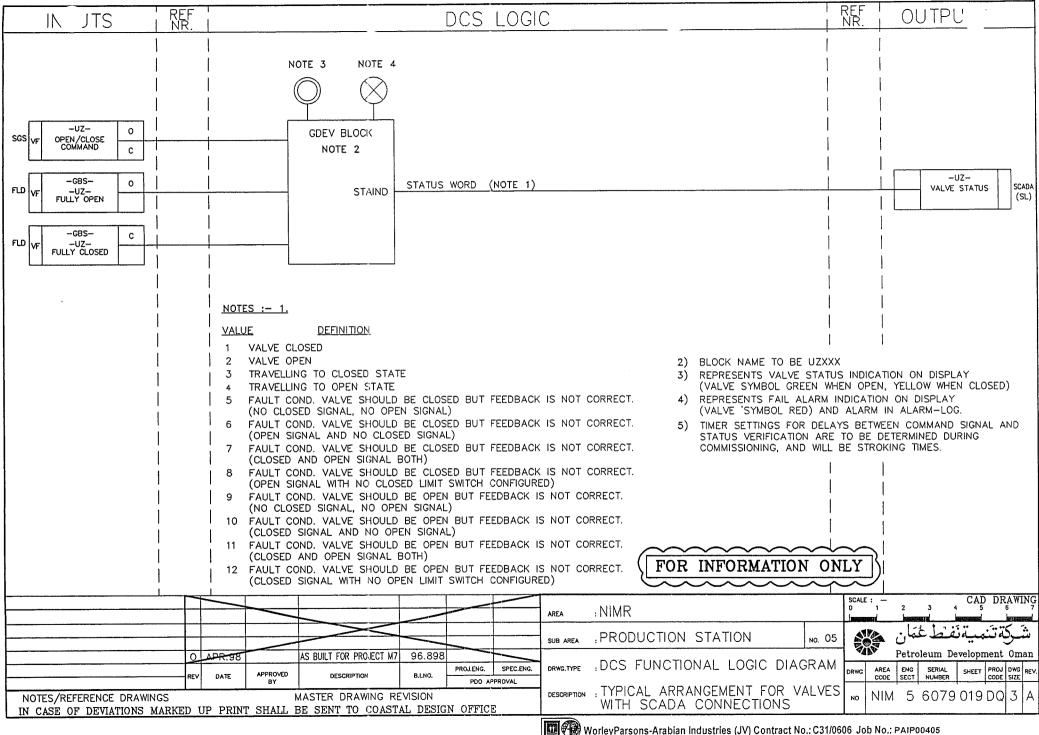
D 464,08 C FEB'02 00.818 OME /26 JUN'01 99.614 ONE /22 A JULY'00 00.826 ONE /23 AS BUILT FOR PROJ. '7G' 0 APR.98 AS BUILT FOR PROJECT M7 96.898 PROJ.ENG. SPEC.ENG. APPROVED DESCRIPTION DATE PDO APPROVAL NOTES/REFERENCE DRAWINGS MASTER DRAWING REVISION IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

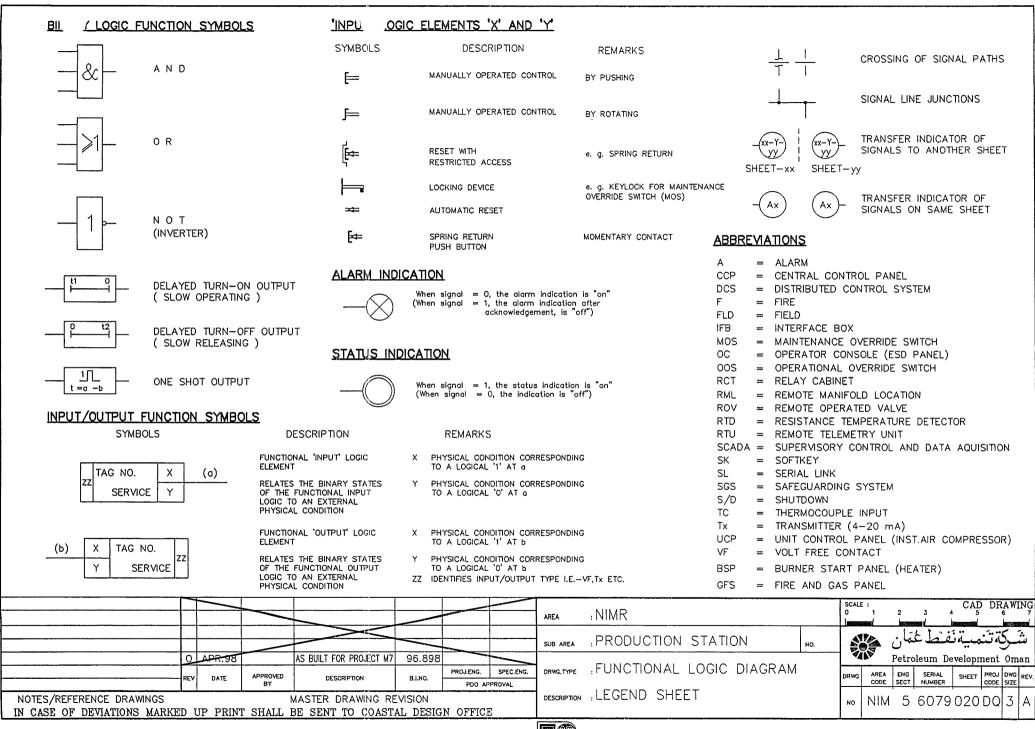
AS BUILT UPTO NOV. 08 0T.08.005 IOSO / 22N

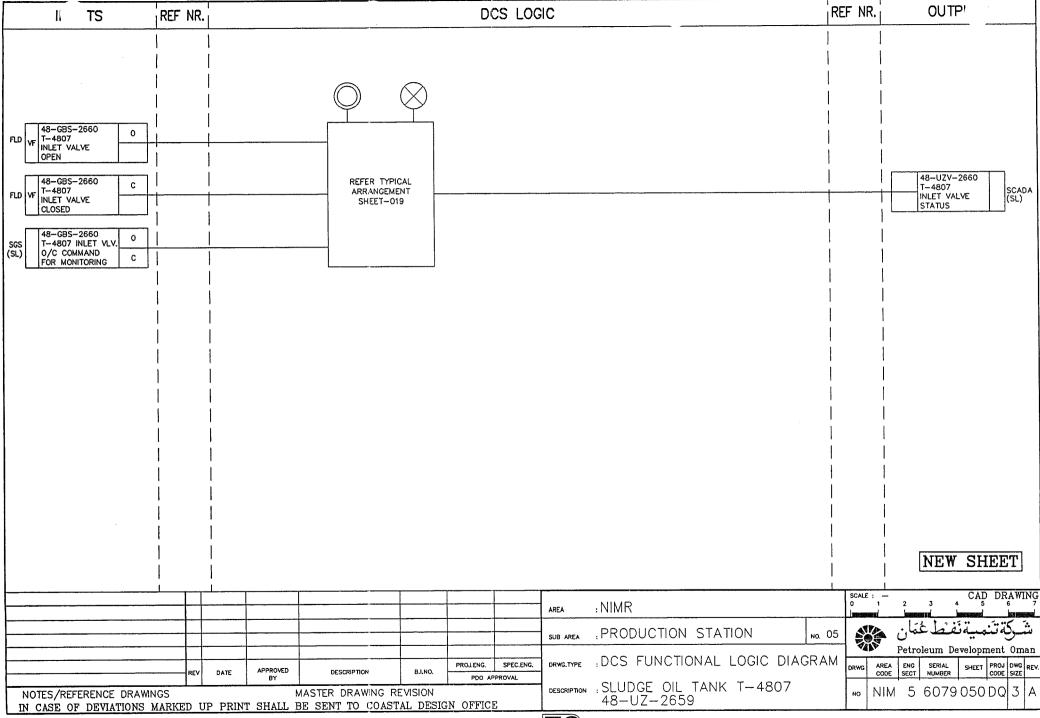
| SHEE<br>NO. | DESCRIPTION                                        | REV.0  | REV.A    | REV.B         | .c     | REV.D    | REV.O     | REV.A    | SHEET<br>NO. | DESCRIPTIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | REV    | .0        | REV.A         | REV.B    | REV.0 | REV.O    | 1        | REV.E    |
|-------------|----------------------------------------------------|--------|----------|---------------|--------|----------|-----------|----------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------|---------------|----------|-------|----------|----------|----------|
| 001         | COVER SHEET                                        | APR.98 | JULY'00  | JUNE'01       | FEB'02 | NOV OB   | JAN. 11   | SEPT.'11 | 036          | and the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first state of the first | 1      |           |               |          | /     | <u> </u> | ~~       | ~        |
| 002         | REVISION/INDEX SHEET                               | 7      | 1 1      |               |        | NOY. '08 |           |          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7      |           |               |          |       |          |          |          |
| 003         |                                                    |        | <b>'</b> |               |        |          |           |          | 038          | F & G ALARMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | APA    | 98        |               | JUNE'01  |       |          |          | 1        |
| 004         | REVISION/INDEX SHEET                               | APR.98 | JULY'00  | JUNE'01       |        | NOV. 08  |           |          | 039          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1      |           |               |          |       |          |          | 1        |
| 005         |                                                    | AUG'0  |          |               |        | /        |           |          | 040          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               |          |       |          |          | 1        |
| 006         |                                                    |        |          | i             | /      | /        |           |          | 041          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | $\forall$ |               |          | /     |          |          |          |
| 007         |                                                    |        |          |               |        |          |           |          | 042          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | _/        |               |          | /     |          |          |          |
| 800         |                                                    |        | 1        |               | /      |          |           |          | 043          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 1         |               |          |       |          |          | <u> </u> |
| 009         | REVISION/INDEX SHEET                               | APR.98 |          | JUNE'01       |        |          |           |          | 044          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | /         |               | 1        |       |          |          |          |
| 010         | REVISION/INDEX SHEET                               | 1      | 1        |               | FEB 02 |          |           |          | 045          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | $\overline{}$ |          |       |          |          |          |
| 011         |                                                    |        | . \      |               | 1      |          |           |          | 046          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | 1             |          |       |          |          |          |
| 012         |                                                    |        |          |               | 7      |          |           |          | 047          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | $\neg \vdash$ |          |       |          |          |          |
| 013         |                                                    |        | 1        | \             | 7      |          |           |          | 048          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               |          |       |          |          |          |
| 014         |                                                    |        |          | \ /           |        |          |           |          | 049          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               | 7        |       |          |          |          |
| 015         |                                                    |        |          | \ /           |        |          |           | (        | 050          | 48-UZ-2659 SLUDGE OIL TANK T-4807                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | )      |           |               | 7        |       | JAN. 11  | SEPT.'11 | $\sim$   |
| 016         |                                                    |        |          |               |        |          |           |          | 051          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               | /        |       |          | ~~       |          |
| 017         |                                                    |        |          | X             |        |          |           |          | 052          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               | <b>\</b> |       | 1        |          |          |
| 018         | GENERAL NOTES                                      | APR.98 |          | 7             |        |          |           | SEPT. 11 |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | /             | 1        |       |          |          |          |
| 019         | TYP. ARRANGEMENT FOR VALVES WITH SCADA CONNECTIONS |        |          | $\mathcal{T}$ |        |          |           | SEPT. 11 |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               | 1        |       |          |          |          |
| 020         | LEGEND SHEET                                       |        |          | /             |        |          | ( JAN. 11 | SEPT.'11 | 055          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               |          |       |          |          |          |
| 021         |                                                    |        | /        |               | 1      |          | ~~~       |          | 056          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | $\neg$        |          |       |          |          |          |
| 022         |                                                    |        |          |               | \      |          |           |          | 057          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | 7             |          |       |          |          |          |
| 023         |                                                    |        |          |               | 1      |          |           |          | 058          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | 7             |          |       |          |          |          |
| 024         |                                                    |        |          |               |        |          |           |          | 059          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           | 7             |          |       |          |          |          |
| 025         |                                                    |        |          |               |        |          |           |          | 060          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 1         |               |          |       |          |          |          |
| 026         |                                                    |        | /        |               |        |          |           |          | 061          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | $\neg$    |               |          |       |          |          |          |
| 027         |                                                    |        | 7        |               |        |          |           |          | 062          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 7         |               |          | 1     |          |          |          |
| 028         |                                                    |        | /        |               |        | \        |           |          | 063          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 71        |               |          |       |          |          |          |
| 029         |                                                    |        |          |               |        |          |           |          | 064          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        | 7         |               |          |       |          |          |          |
| 030         |                                                    |        |          |               |        |          |           |          | 065          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |           |               |          |       |          |          |          |
| 031         |                                                    |        |          |               |        |          |           |          | 066          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7      |           |               |          |       |          |          |          |
| 032         |                                                    |        |          |               |        |          |           |          | 067          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | $\Box$ |           |               |          |       |          |          |          |
| 033         |                                                    | 7      |          |               |        |          |           |          | 068          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7      |           |               |          |       |          |          |          |
| 034         |                                                    |        |          |               |        |          |           |          | 069          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7      |           |               |          | 1     |          |          |          |
| 035         |                                                    | /      |          |               |        |          |           |          | 070          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | /      |           |               | T        | 1 1   | V        |          |          |

|                                 | EB'02  |          |                         |          |           | SK        | l           |                           |        | SCALE :  |                | _        | CAD      | DRAWING     |
|---------------------------------|--------|----------|-------------------------|----------|-----------|-----------|-------------|---------------------------|--------|----------|----------------|----------|----------|-------------|
|                                 |        |          | AS BUILT FOR PROJ.3R    | 00.818   | OME/26    |           | AREA        | :NIMR                     |        | l marine | 1 2<br>n/ bess | 3        | 4 5      | 6 7         |
| IB 3                            | JUN'01 |          | AS BUILT FUR PROJ ZW    | 99.614   | ONE/22    |           |             | DDODLIGHON CTATION        |        | AWD      |                | 12 12    |          | شَكة تَ     |
| JU A                            | ULY'00 |          | AS BUILT FOR PROJ. '7G' | 00.826   | ONE/23    |           | SUB AREA    | PRODUCTION STATION        | NO. 05 |          | ٣ 🚔            | <u> </u> | ح جيب    | سرود        |
| ه ا ه ا                         | PR.98  |          | AS BUILT FOR PROJECT M7 | 96.898   |           |           |             | DOG FUNCTIONAL LOGIC DIA  | l      | 41       | Petr           | oleum l  | )evelopm | ent Oman    |
| REV                             | DATE   | APPROVED | DESCRIPTION             | B.I.NO.  | PROJ.ENG. | SPEC.ENG. | DRWG, TYPE  | DCS FUNCTIONAL LOGIC DIAC | JRAM [ | DRWG     | AREA ENG       |          | SHEET F  | ROJ DWG REV |
|                                 |        | BY       | Description 1           | 5        | PDO AF    | PROVAL    |             |                           | - 1    |          | CODE SECT      | NUMBER   |          | ODE SIZE    |
| NOTES/REFERENCE DRAWINGS        |        | N        | MASTER DRAWING RE       | VISION   |           | •         | DESCRIPTION | REVISION / INDEX SHEET    |        | NO       | VIM 5          | 607      | 9 002 [  | 003 A       |
| IN CASE OF DEVIATIONS MARKED UP | PRINT  | SHALL E  | BE SENT TO COASTA       | AL DESIG | N OFFICE  | Ξ         |             |                           |        |          |                |          |          |             |



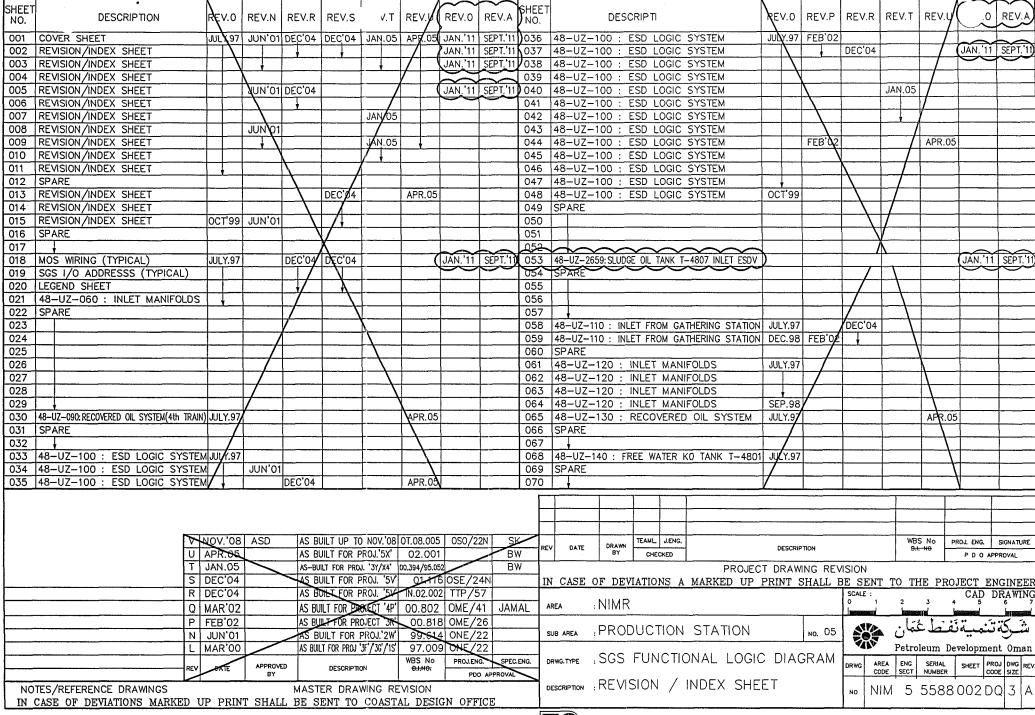


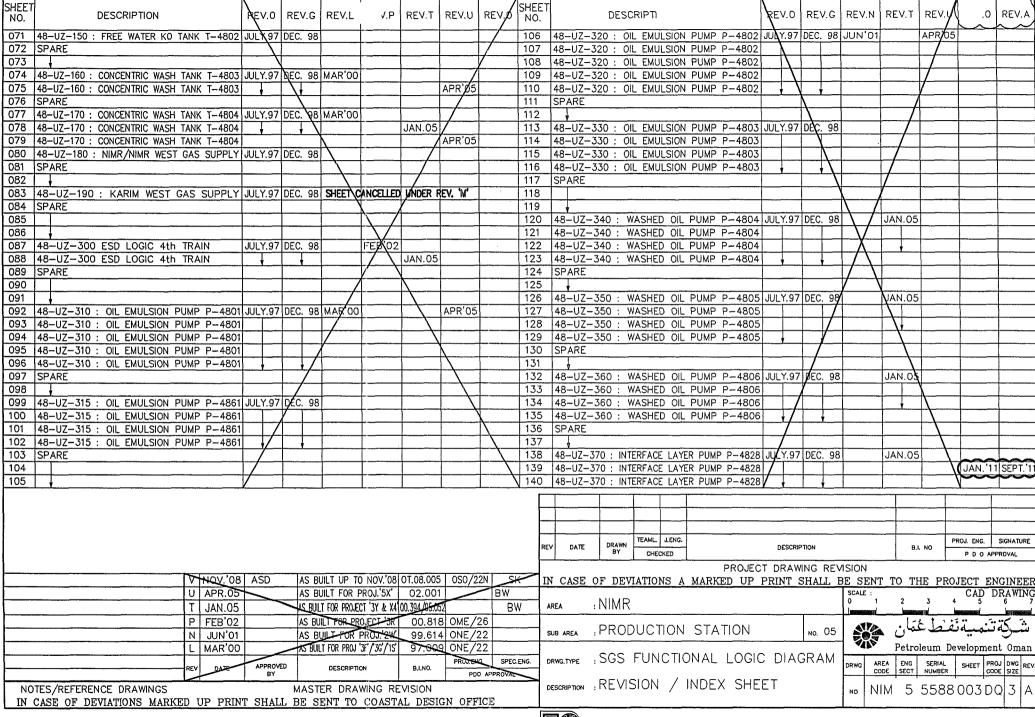


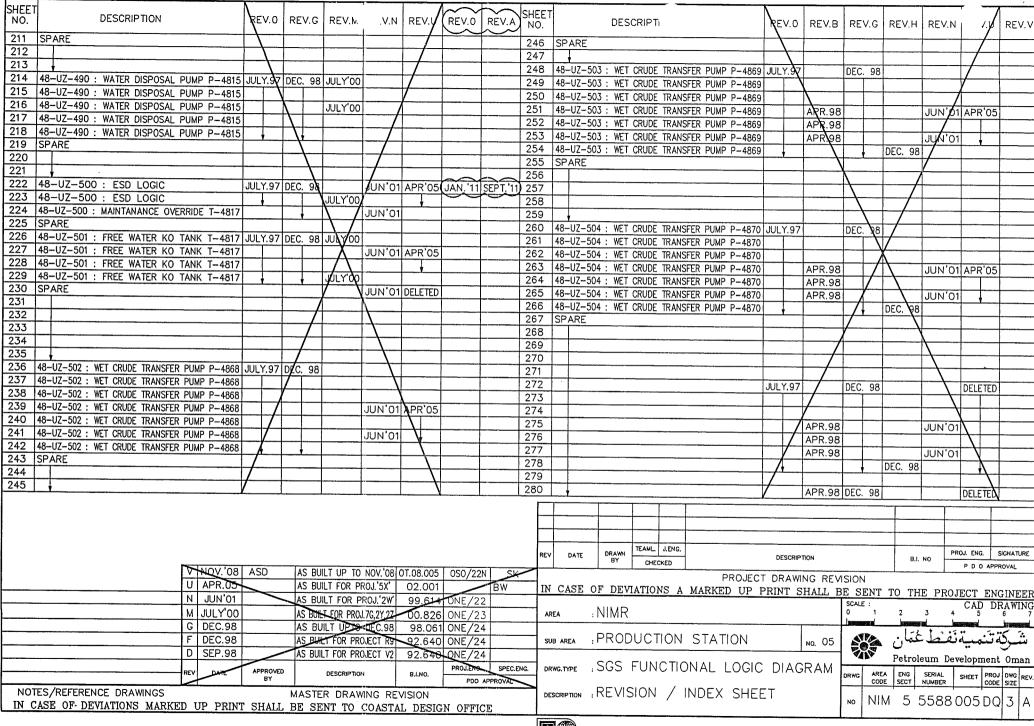


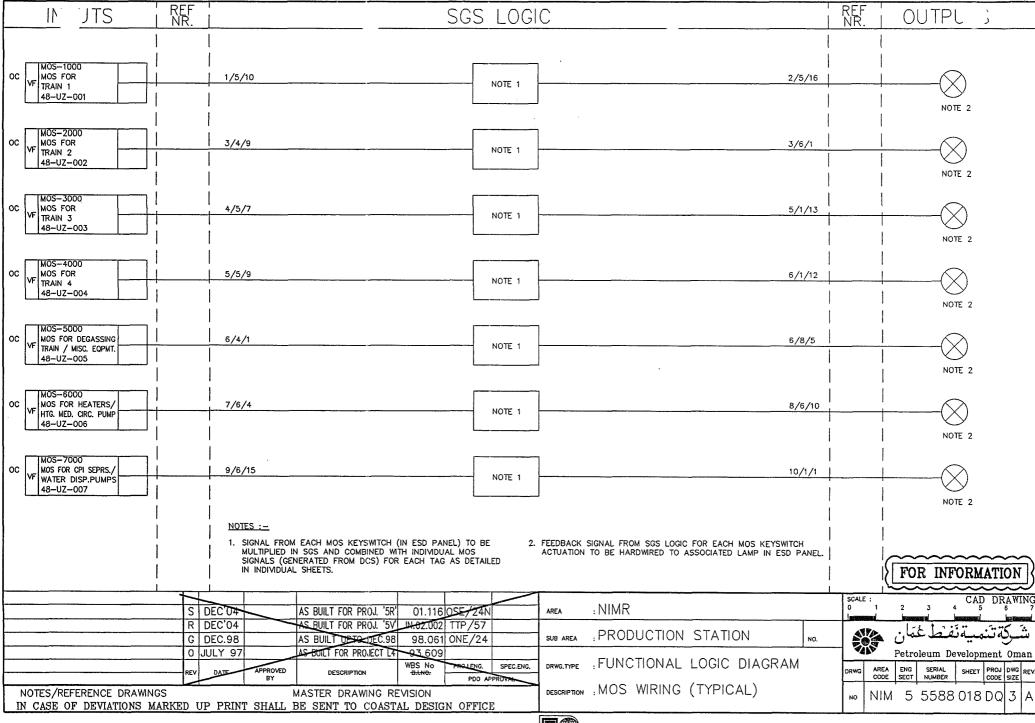
## SGS FUNCTIONAL LOGIC DIAGRAMS R PRODUCTION STATION"

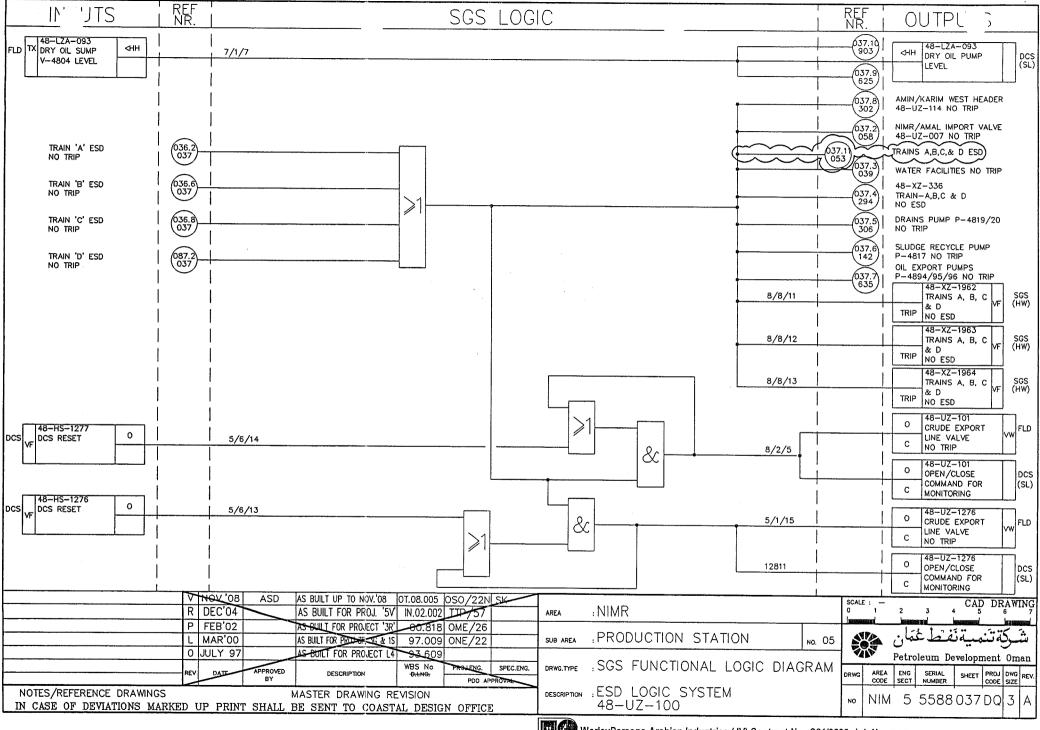
APPROVED FOR SCOPE OF 'DQ' PROJECT CONSTRUCTION WBS NO.: NIM.IN.09.011 SEPT.'11 SUAG 838 FT APPROVED FOR CONSTRUCTION IN.09.011 DSE/23N SG SJ ISSUED FOR COMMENTS JAN'11 DSE/23N IN.09.011 AS BUILT UP TO NOV.'08 OT.08.005 | OSO/22N VNOV.'08 ASD DRAWN PROJ. ENG. DESCRIPTION U APR.65 AS BUILT FOR PROJ.'5X' 02.001 BW P D O APPROVAL T JAN.05 AS-BUILT FOR PROJ. '3Y/X4' 00.394/95.052 PROJECT DRAWING REVISION S DEC'04 AS BUILT FOR PROJ. '5R' 01-116 OSE/24N IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER R DEC'04 AS BOILT FOR PROJ. '5V/ IN.02.002 TTP/57 :NIMR Q MAR'02 AS BUILT FOR PROJECT '4P' 00.802 JAMAL AREA P FEB'02 SUB AREA : PRODUCTION STATION M JULY'00 AS BUILT FOR PROJ S8,T1,M9 00.826 ONE /24 D SEP.98 AS BUILT FOR PROJECT V2 92.640 DRWG.TYPE : SGS FUNCTIONAL LOGIC DIAGRAM PROJ.ENG. SPEC.ENG. APPROVED DESCRIPTION : COVER SHEET NOTES/REFERENCE DRAWINGS MASTER DRAWING REVISION NIM 5 5588 001DQ 3 A IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

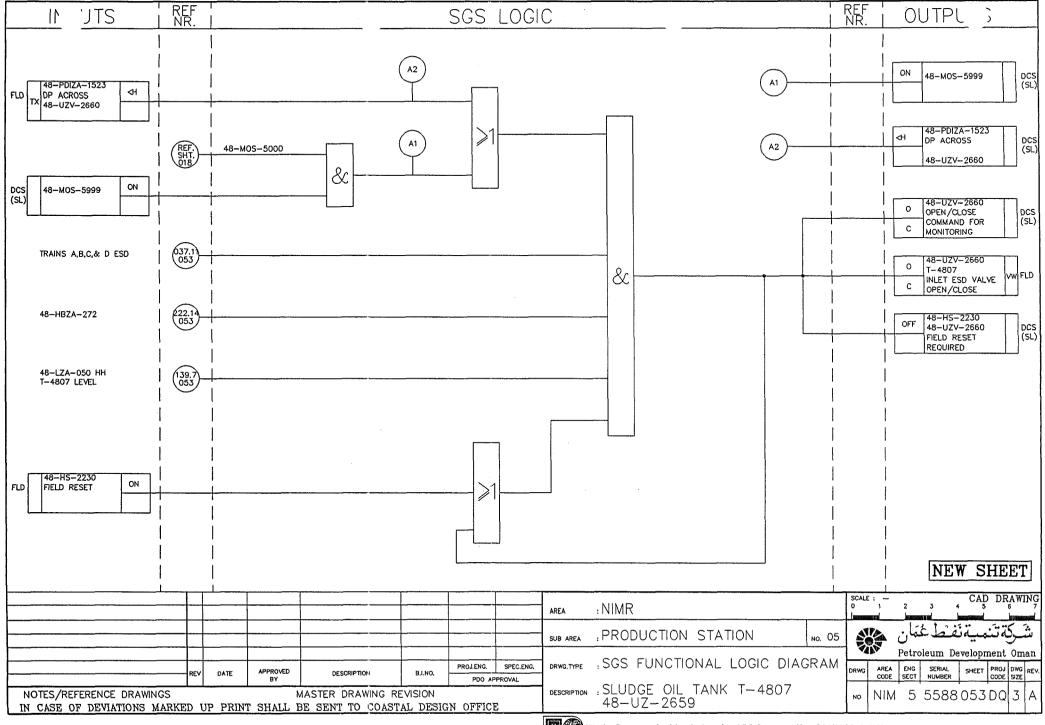


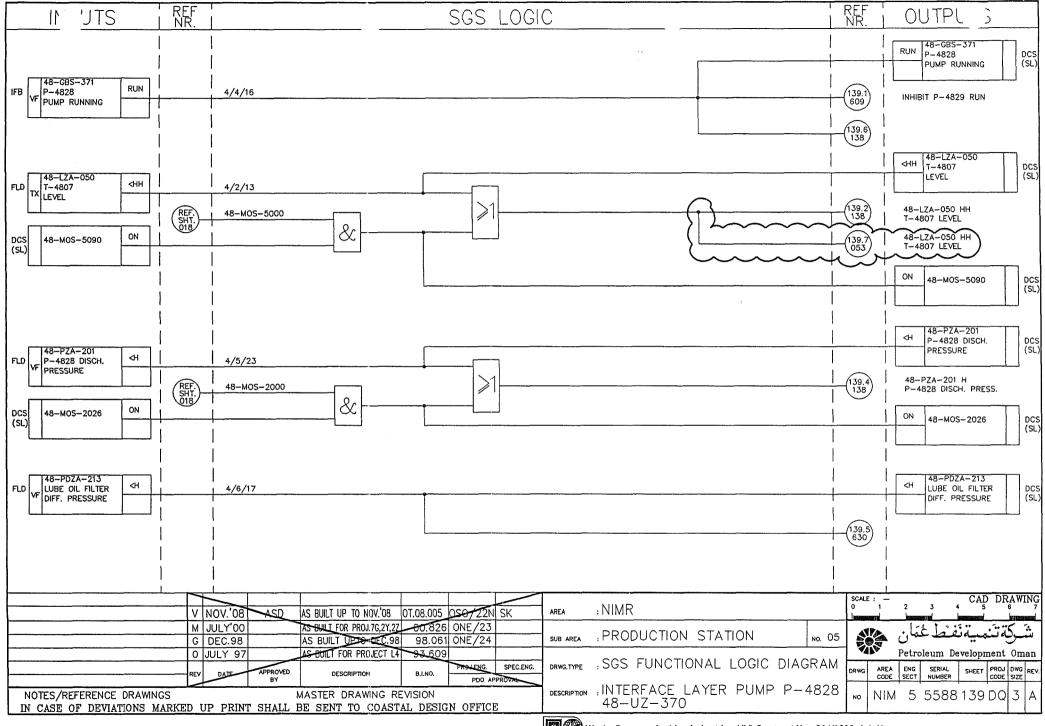


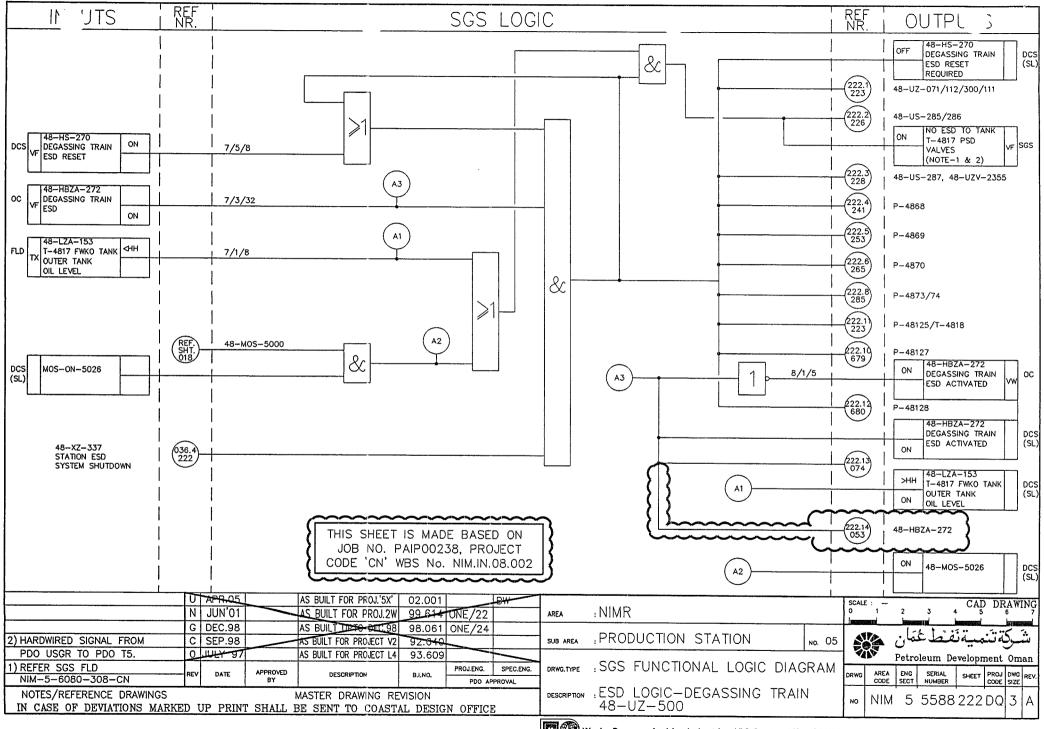












## INSTRUMENT LOOP DIAGRAMS NIMR SLUDGE PIT FACILITY

## APPROVED FOR CONSTRUCTION

THIS COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT 'DQ' WBS No. NIM.IN.09.011

|                          | $\Box$                  |      |          |             |         |           |           |  |  |  |  |  |  |
|--------------------------|-------------------------|------|----------|-------------|---------|-----------|-----------|--|--|--|--|--|--|
|                          |                         |      |          |             |         |           |           |  |  |  |  |  |  |
|                          |                         |      |          |             |         |           |           |  |  |  |  |  |  |
|                          |                         |      |          |             |         |           |           |  |  |  |  |  |  |
|                          | -                       |      |          |             |         |           |           |  |  |  |  |  |  |
|                          | REV                     | DATE | APPROVED | DESCRIPTION | B.I.NO. | PROJ.ENG. | SPEC.ENG. |  |  |  |  |  |  |
|                          |                         | DAIL | BY       | DESCRIPTION | B.I.NO. | PDO AP    | PROVAL    |  |  |  |  |  |  |
| NOTES/REFERENCE DRAWINGS | MASTER DRAWING REVISION |      |          |             |         |           |           |  |  |  |  |  |  |

IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

| Α   | SEPT.'11 | SUAD  | Sur           | Ž   | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    |           |
|-----|----------|-------|---------------|-----|---------------------------|-----------|------------|-----------|
| 0   | MAY.'11  | NS    | SG            | 8   | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    |           |
| REV | EV DATE  | DRAWN | TEAML. J.ENG. |     | DESCRIPTION               | B.I. NO   | PROJ. ENG. | SIGNATURE |
| REV | DATE     | BY    | CHEC          | KED | DESCRIPTION               | B.I. NO   | PDOA       | PPROVAL   |

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEEI

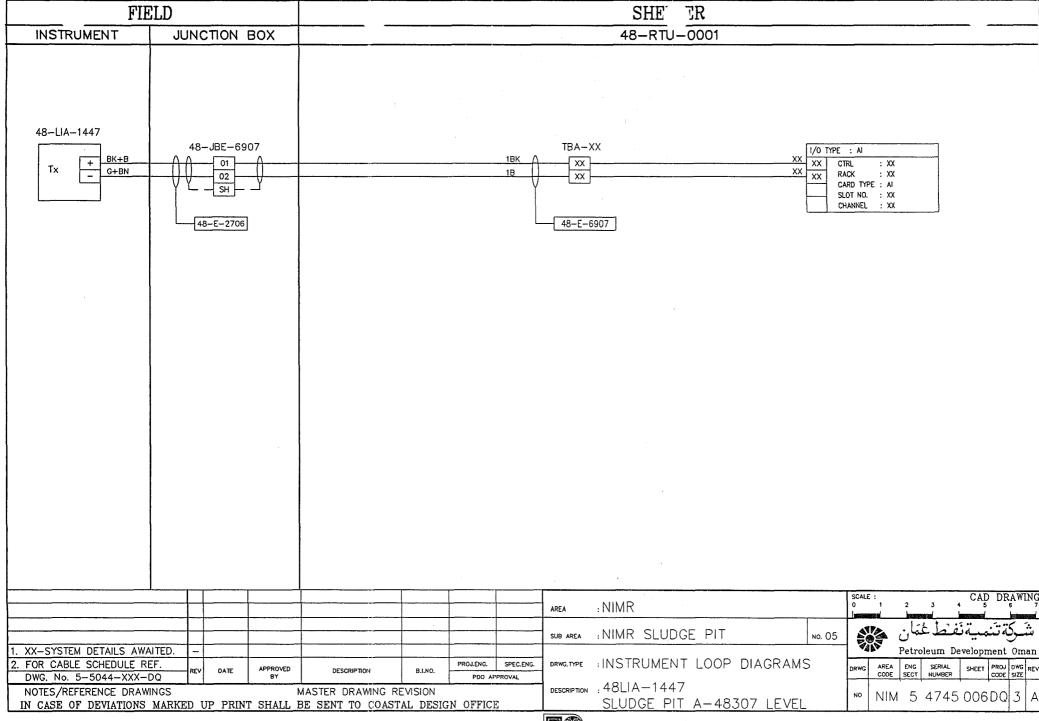
: NIMR AREA :NIMR SLUDGE PIT NO. 05 DRWG.TYPE : INSTRUMENT LOOP DIAGRAMS

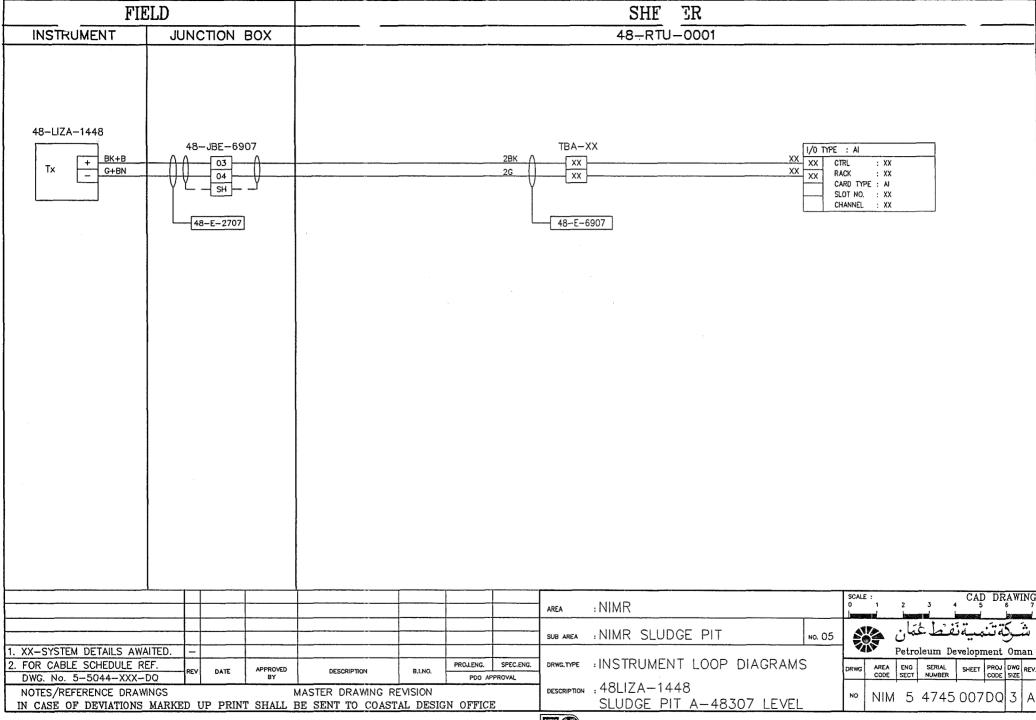
COVER SHEET

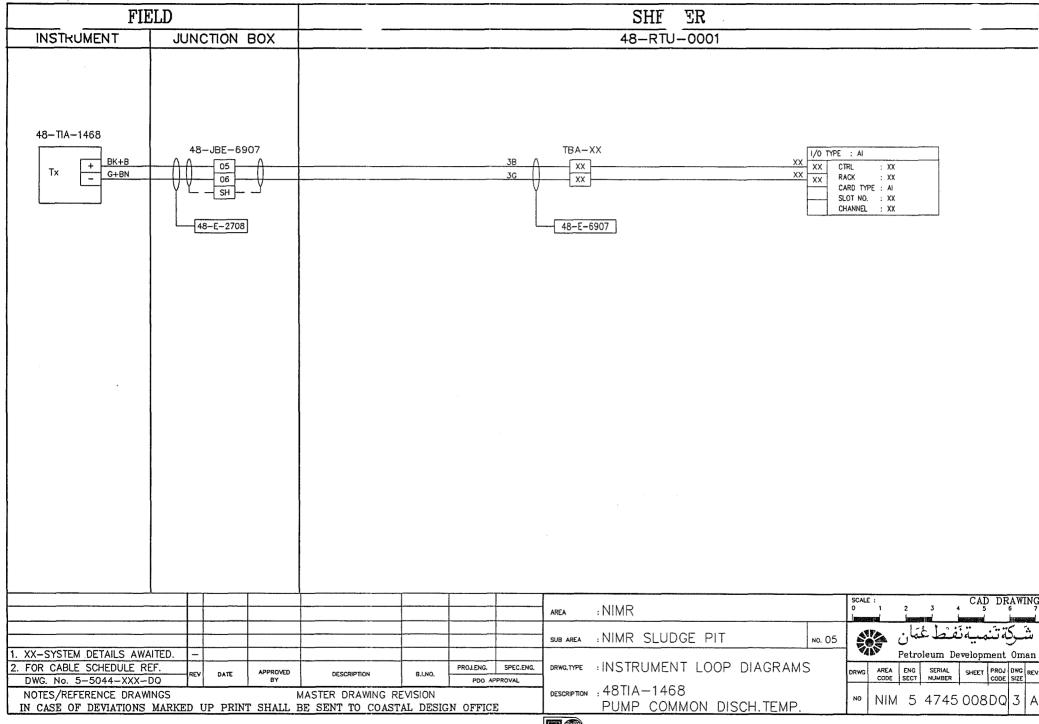
Petroleum Development Oman

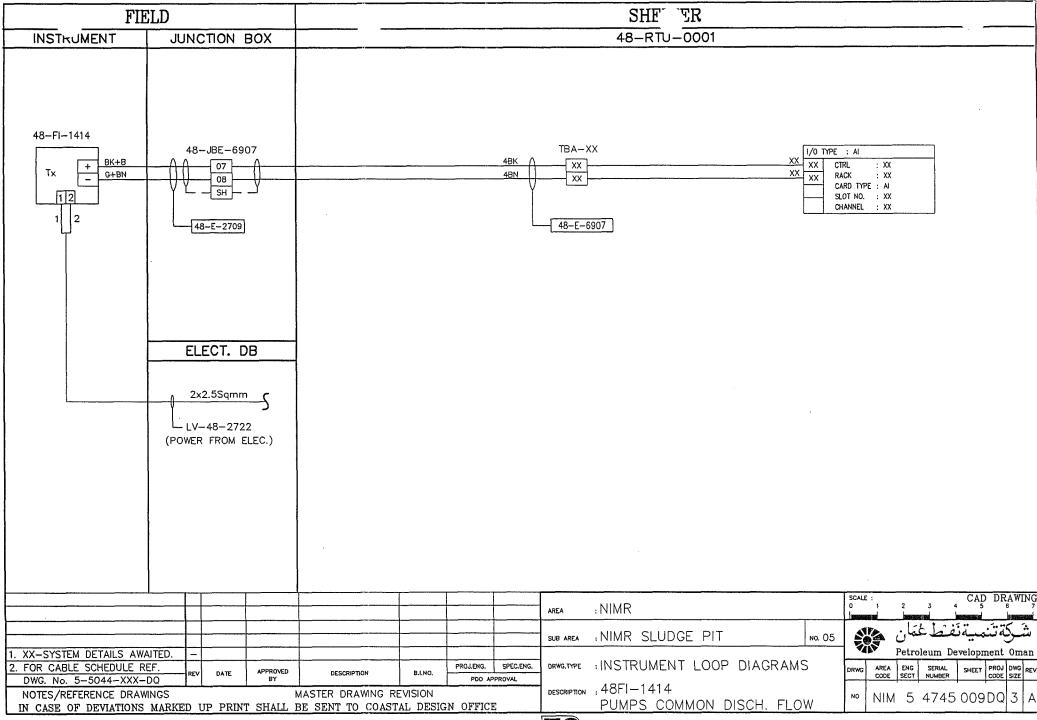
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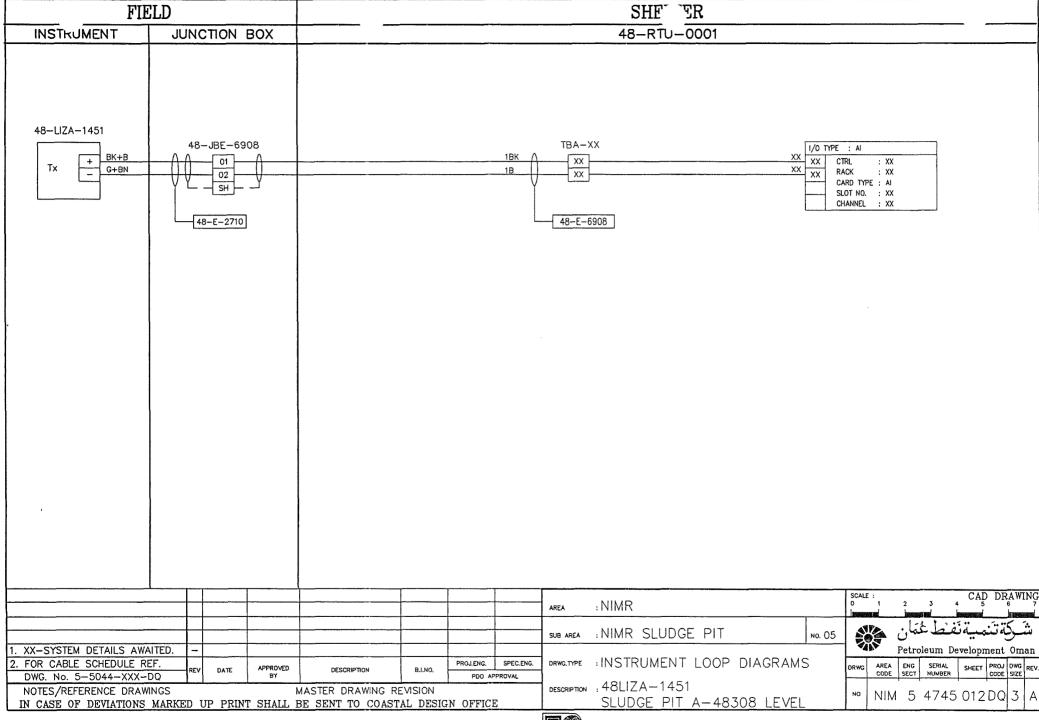
| DESCRIPTION          | SHEET           | REV 0     | REV A        | REV B        | REV C       | REV D        | RE\           | ′ E       | DESCRIPT                               | TION    |                                         |          | SHE     | ET   F                                                                      | REV O                                  | REV A       | REV    | ⁄в      | REV C               | REV D        | REV E               |
|----------------------|-----------------|-----------|--------------|--------------|-------------|--------------|---------------|-----------|----------------------------------------|---------|-----------------------------------------|----------|---------|-----------------------------------------------------------------------------|----------------------------------------|-------------|--------|---------|---------------------|--------------|---------------------|
| COVER SHEET          | 001             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 035     |                                                                             |                                        |             |        |         |                     |              | <b>1</b>            |
| REVISION/INDEX SHEET | 002             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 036     |                                                                             | ······································ | -           |        |         |                     |              |                     |
| SPARE                | 003             |           |              |              |             |              |               | 480       | LICA-1449                              |         |                                         |          | 037     | М                                                                           | AY '11                                 | SEPT.'11    |        |         |                     |              |                     |
| SPARE                | 004             |           |              |              |             |              | _             |           | LIZA-1450                              |         | *************************************** |          | 038     | м                                                                           | AY '11                                 | SEPT.'11    |        |         |                     |              |                     |
| SPARE                | 005             |           |              | <u> </u>     |             |              |               |           | PIZA-1518                              |         |                                         |          | 039     | -                                                                           | AY '11                                 | SEPT.'11    |        |         |                     |              | $\top$              |
| 48LIA-1447           | 006             | MAY '11   | SEPT.'11     |              |             |              |               |           | PIZA-1519                              |         |                                         |          | 040     |                                                                             | AY '11                                 | SEPT.'11    | 1      |         |                     |              |                     |
| 48LIZA-1448          | 007             | MAY '11   | SEPT.'11     |              |             |              |               |           | PI-1522                                |         |                                         |          | 041     |                                                                             | AY '11                                 | SEPT.'11    |        |         |                     |              | $\top$              |
| 48TIA-1468           | 008             | MAY '11   | SEPT.'11     |              |             |              | _             |           | FI-1415                                |         |                                         |          | 042     |                                                                             | IAY '11                                | SEPT.'11    | +      |         |                     |              |                     |
| 48FI-1414            | 009             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 043     |                                                                             |                                        | 1           |        |         |                     |              | +                   |
| SPARE                | 010             | ·····     | 1 02         |              |             |              |               |           |                                        |         |                                         |          | 044     |                                                                             |                                        |             | +      |         |                     |              | +                   |
| SPARE                | 011             |           |              |              |             |              |               | CO        | NNECTION BE                            | TWFFI   | N CI SK                                 | ID &     |         | ш                                                                           | AY '11                                 | SEPT.'11    | _      |         |                     |              |                     |
| 48LIZA-1451          | 012             | MAY '11   | SEPT.'11     | <del> </del> |             |              |               |           | MINEO HON BE                           | - 1 17  | 14 01 311                               | 10 ac    | 046     |                                                                             | 101 /1                                 | JUI 1. 17   |        |         |                     |              |                     |
| 48LIA-1452           | 013             | MAY '11   | SEPT.'11     |              | <b></b>     | ļ            |               |           | ······································ |         |                                         |          | 047     |                                                                             | ···                                    |             |        |         |                     |              |                     |
| 48PIZA-1516          | 013             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 047     |                                                                             |                                        |             | -      |         |                     |              |                     |
| 48PDIA-1510          | 014             |           |              |              |             | <del> </del> |               |           |                                        |         |                                         |          | 048     |                                                                             |                                        |             |        |         |                     | <del> </del> | +                   |
|                      |                 | MAY '11   | SEPT.'11     |              |             | <del> </del> |               |           | UC 20044 /0                            | CTAT    | DT /CT0/                                |          |         |                                                                             | IAV '11                                | SEPT.'11    | +      |         |                     | -            |                     |
| 48PDIA-1521<br>SPARE | 016             | MAY '11   | SEPT.'11     |              |             |              |               |           | HS-2664A/B                             |         |                                         |          | 050     |                                                                             | IAY '11                                | SEPT. 11    | +      |         |                     | <del> </del> |                     |
|                      |                 |           | <del> </del> |              | ļ           | <del></del>  |               |           | HS-2663A/B                             |         |                                         |          |         |                                                                             | IAY '11                                |             |        |         |                     | -            |                     |
| SPARE                | 018             | <u> </u>  | -            |              | ļ.———       |              |               |           | HS-2660A/B                             |         | <u> </u>                                |          | 052     |                                                                             | IAY '11                                | SEPT.'11    |        |         |                     | <del> </del> |                     |
| SPARE ATTACA         | 019             | 14114 144 |              |              |             |              |               | 481       | HS-2658A/B                             | SIAF    | K1/510                                  |          | 053     | M                                                                           | IAY '11                                | SEPT.'11    |        |         |                     |              |                     |
| 48XZA-2342           | 020             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 054     | $-\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$ |                                        |             |        |         |                     |              |                     |
| 48XZA-2343           | 021             | MAY '11   | SEPT.'11     | <del></del>  |             |              |               |           | 20.0050.000                            |         | LIDIOLTIC                               |          | 055     |                                                                             |                                        |             | _      |         |                     |              |                     |
| 48HS-2219A/B         | 022             | MAY '11   | SEPT.'11     |              |             | ļ            |               |           | 3B-2656 RUN                            |         |                                         |          | 056     |                                                                             | 1AY '11                                | SEPT.'11    |        |         |                     |              |                     |
| 48HS-2658            | 023             | MAY '11   | SEPT.'11     |              |             |              |               |           | 3B-2657 RUN                            |         |                                         |          | 057     |                                                                             | AY '11                                 | SEPT.'11    |        |         |                     | ļ            |                     |
| 48HS-2220A/B         | 024             | MAY '11   | SEPT.'11     |              |             |              |               |           | GB-2658 RUN                            |         |                                         |          | 058     |                                                                             | 1AY '11                                | SEPT.'11    |        |         |                     |              |                     |
| 48HS-2660            | 025             | MAY '11   | SEPT.'11     |              |             |              |               | 480       | 3B-2659 RUN                            | NING II | NDICATIO                                | N        | 059     | М                                                                           | IAY '11                                | SEPT.'11    |        |         |                     | ļ            | 4                   |
| SPARE                | 026             |           |              |              | ļ           |              |               |           |                                        |         |                                         |          | 060     |                                                                             |                                        |             |        |         |                     |              |                     |
| SPARE                | 027             |           |              |              |             |              |               | ·         | ·                                      |         |                                         |          | 061     | _                                                                           |                                        |             |        |         |                     |              |                     |
| 48XA-4106            | 028             | MAY '11   | SEPT.'11     |              |             |              |               |           | <u> </u>                               |         |                                         |          | 062     |                                                                             |                                        |             |        |         |                     |              |                     |
| SPARE                | 029             |           |              |              |             |              |               |           |                                        |         |                                         |          | 063     |                                                                             |                                        |             |        |         |                     |              |                     |
| 48HS-2661A/B         | 030             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 064     |                                                                             |                                        |             |        |         |                     |              |                     |
| 48HS-2662A/B         | 031             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 065     |                                                                             |                                        |             |        |         |                     |              |                     |
| 48HS-2663            | 032             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 066     |                                                                             |                                        |             |        |         |                     |              |                     |
| 48HS-2664            | 033             | MAY '11   | SEPT.'11     |              |             |              |               |           |                                        |         |                                         |          | 067     | i_                                                                          |                                        |             |        |         |                     |              |                     |
| SPARE                | 034             |           |              |              |             |              |               |           |                                        |         |                                         |          | 068     |                                                                             |                                        |             |        |         |                     |              |                     |
|                      |                 |           |              |              |             |              |               |           |                                        | ————    |                                         |          |         |                                                                             |                                        |             |        |         |                     |              |                     |
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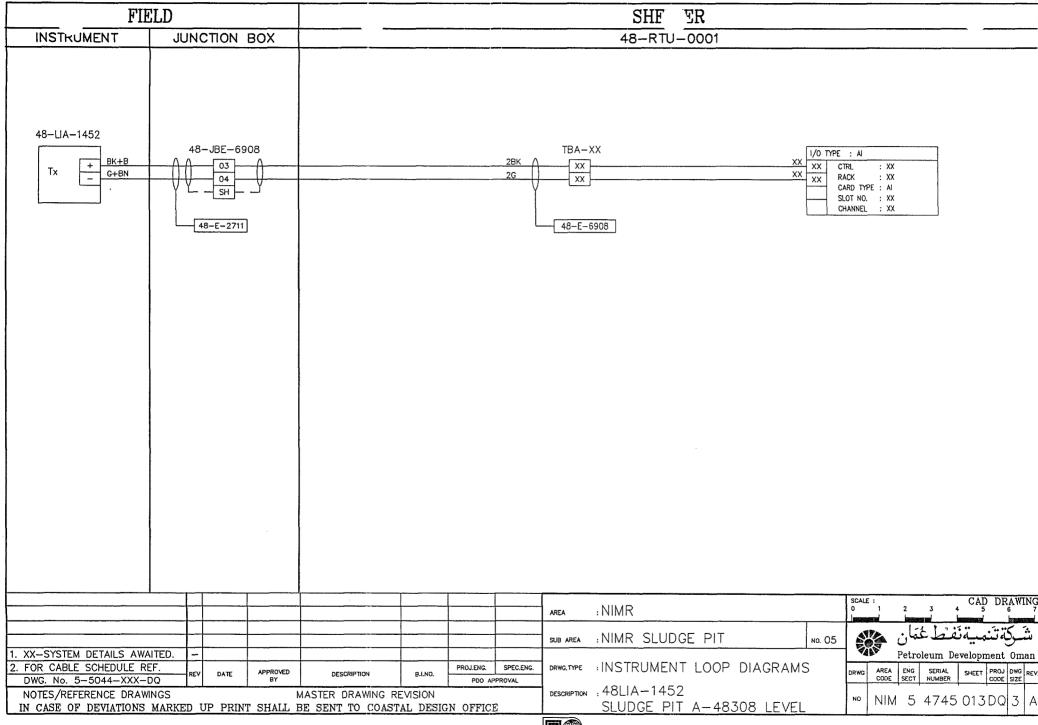


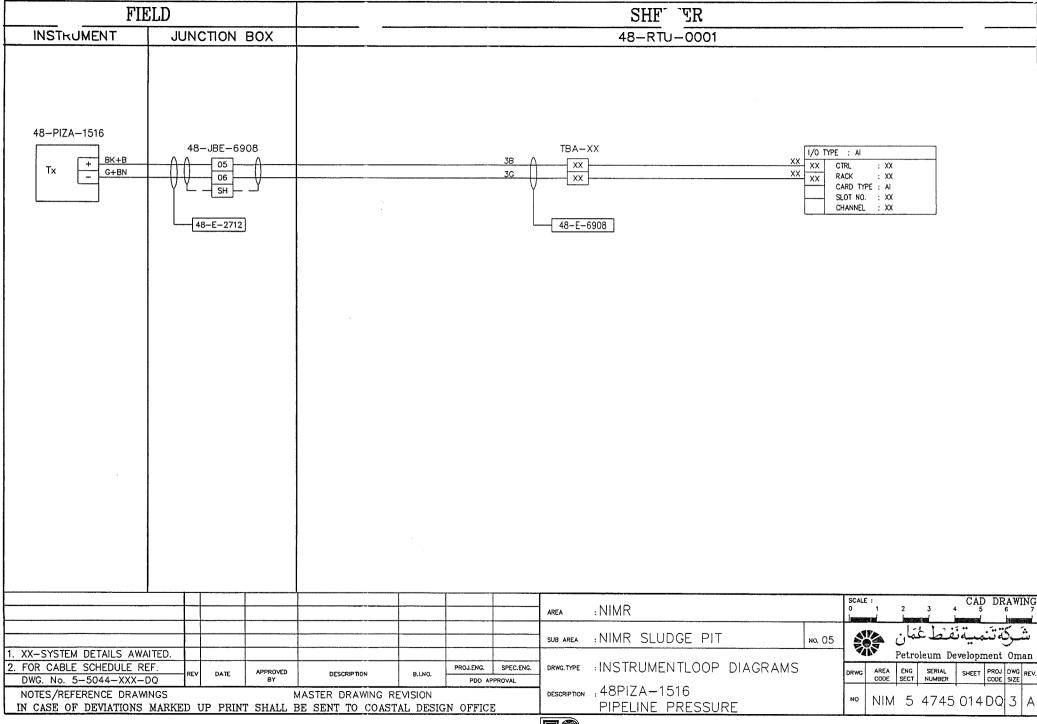


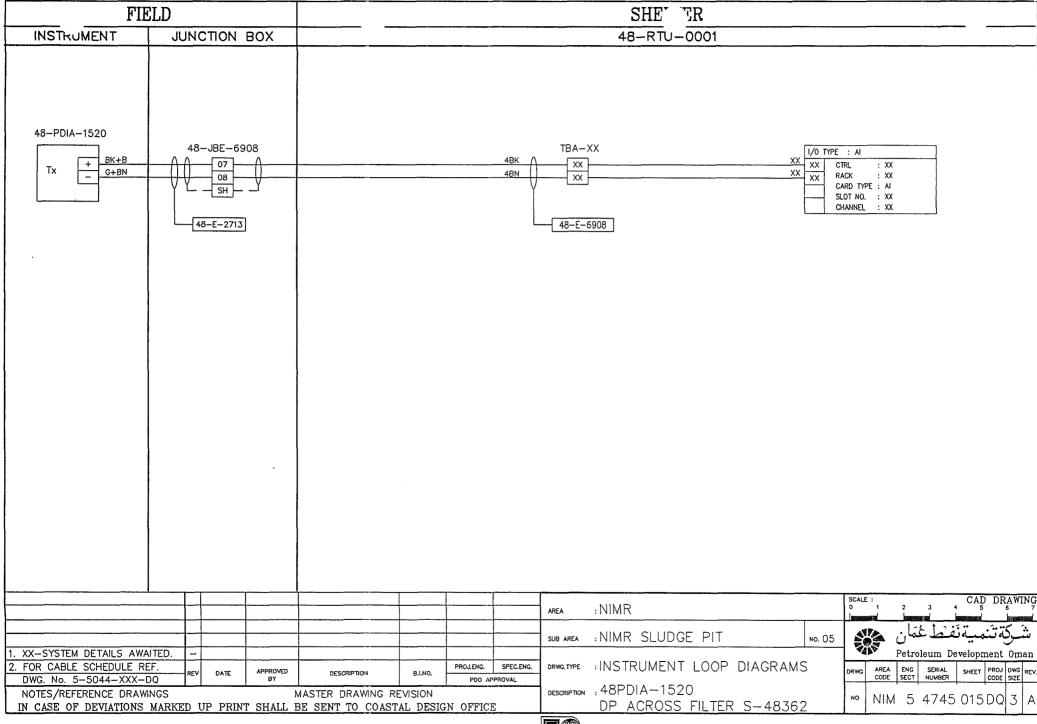


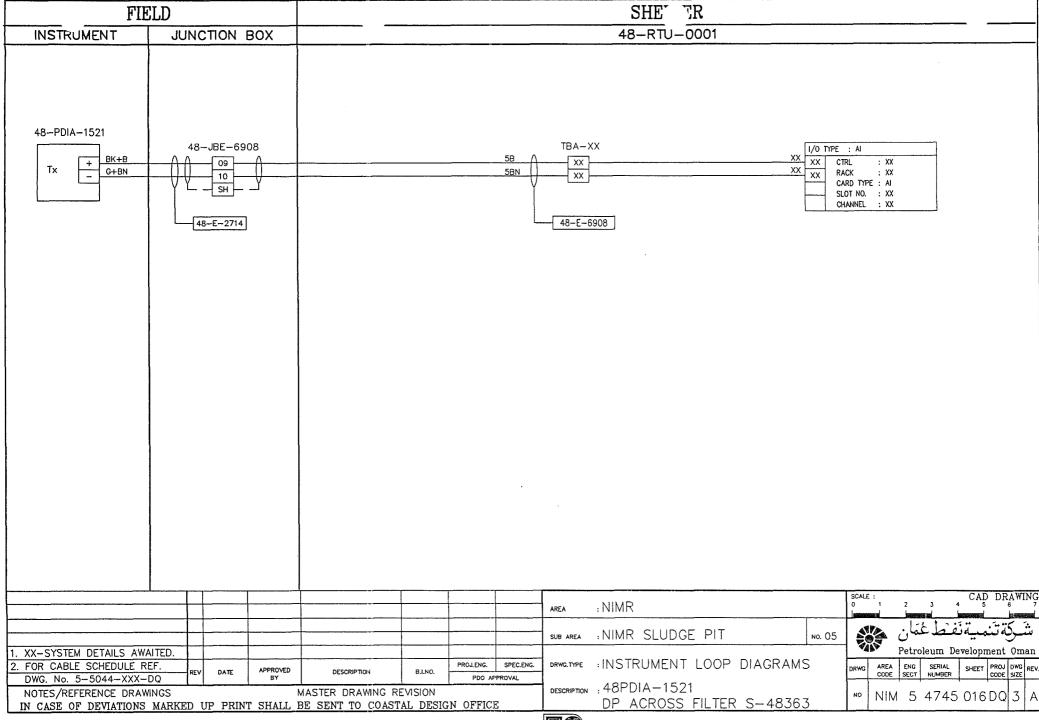


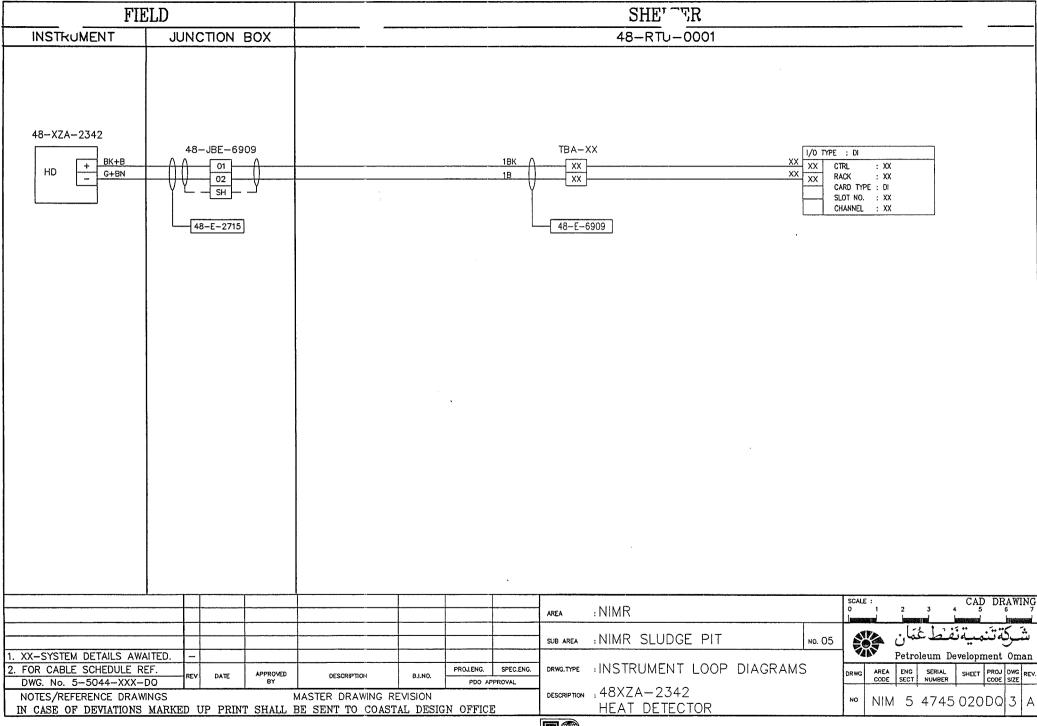


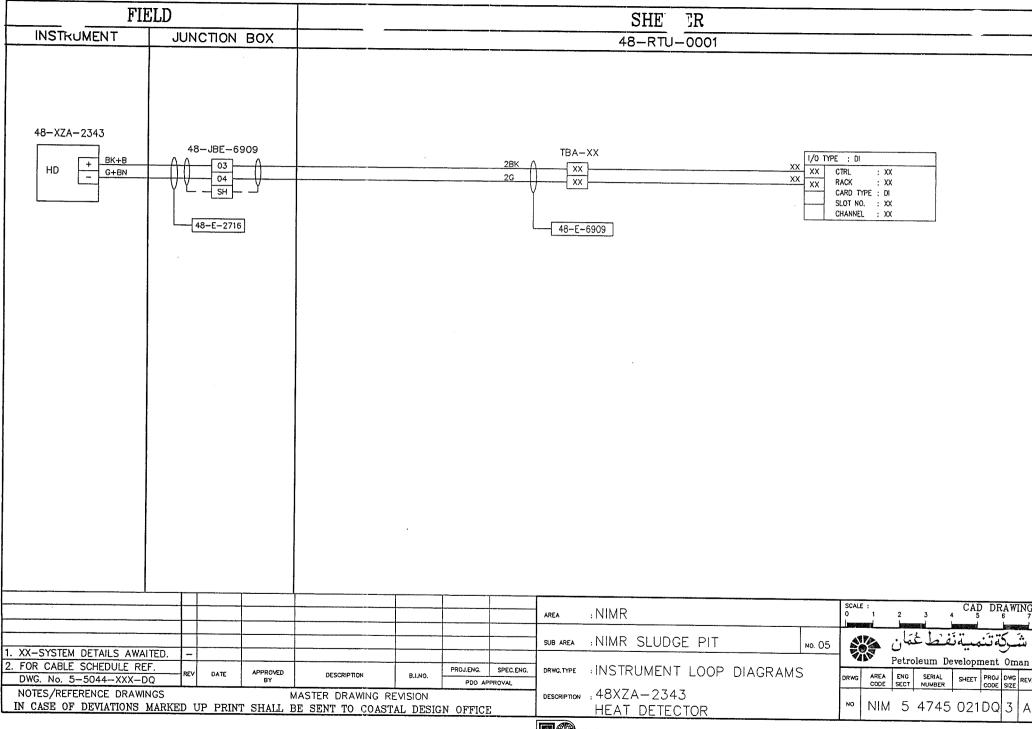


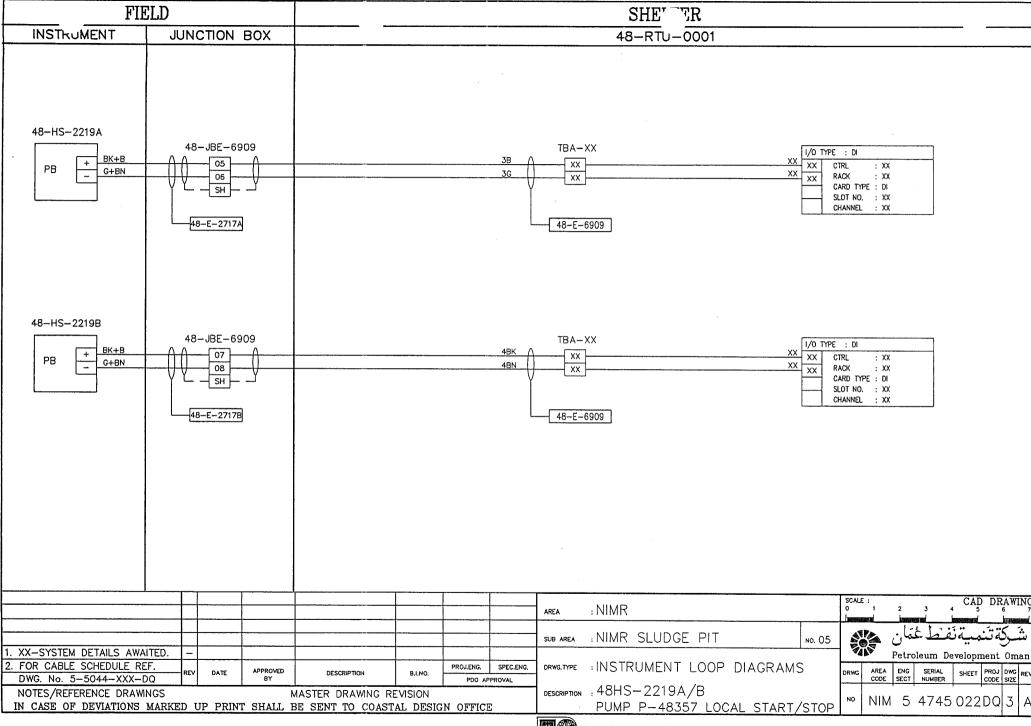


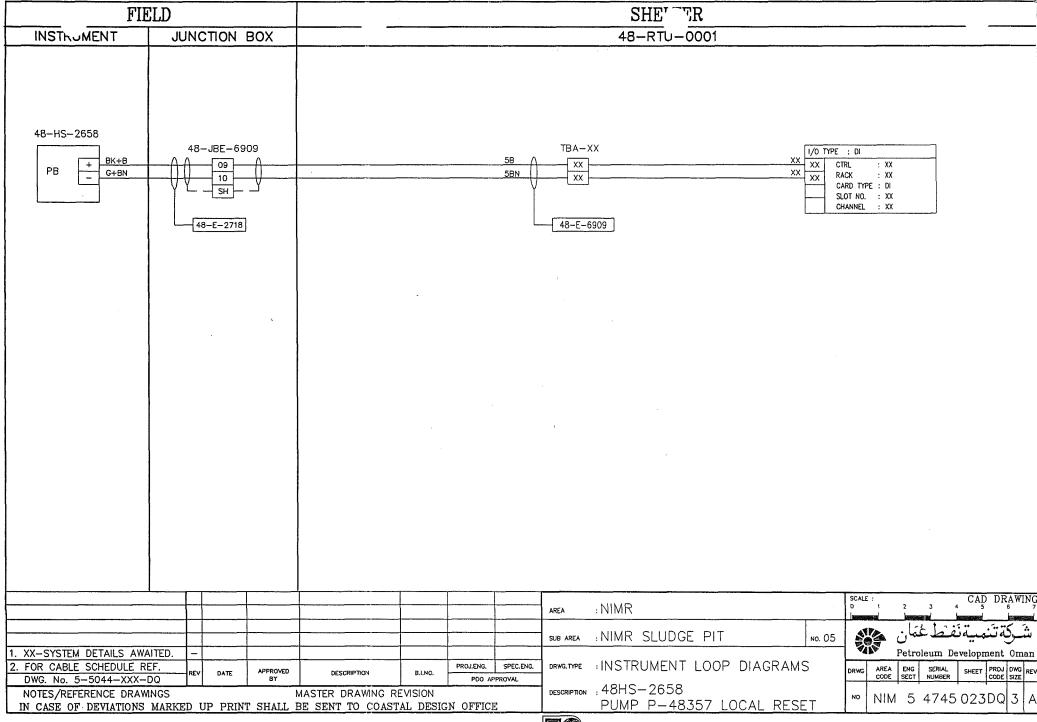


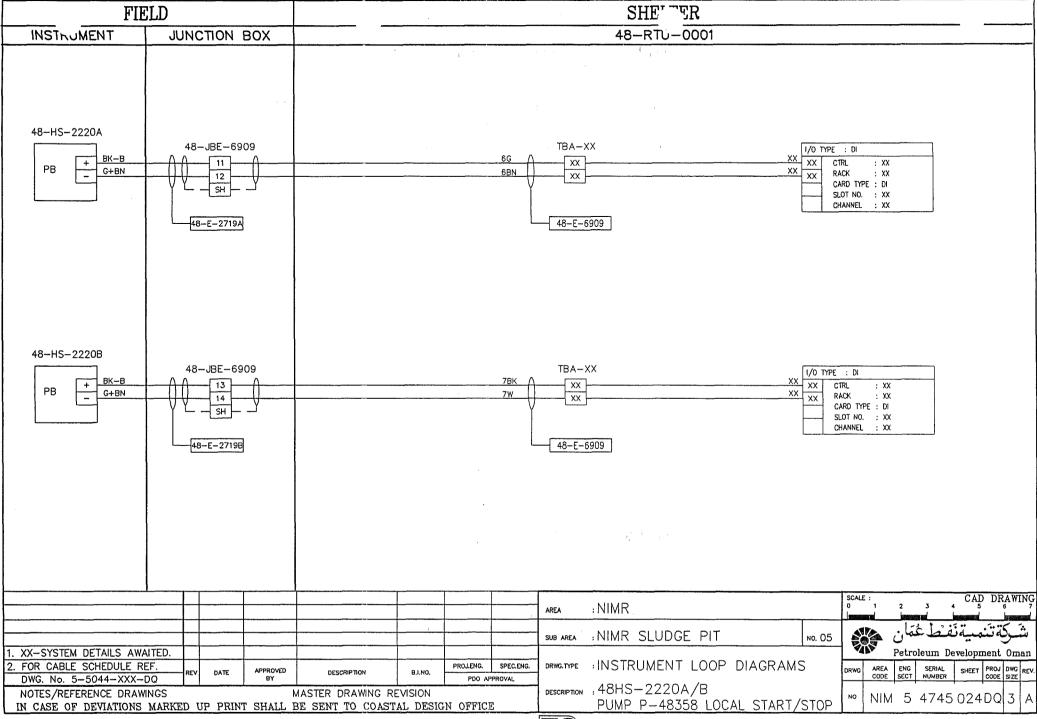


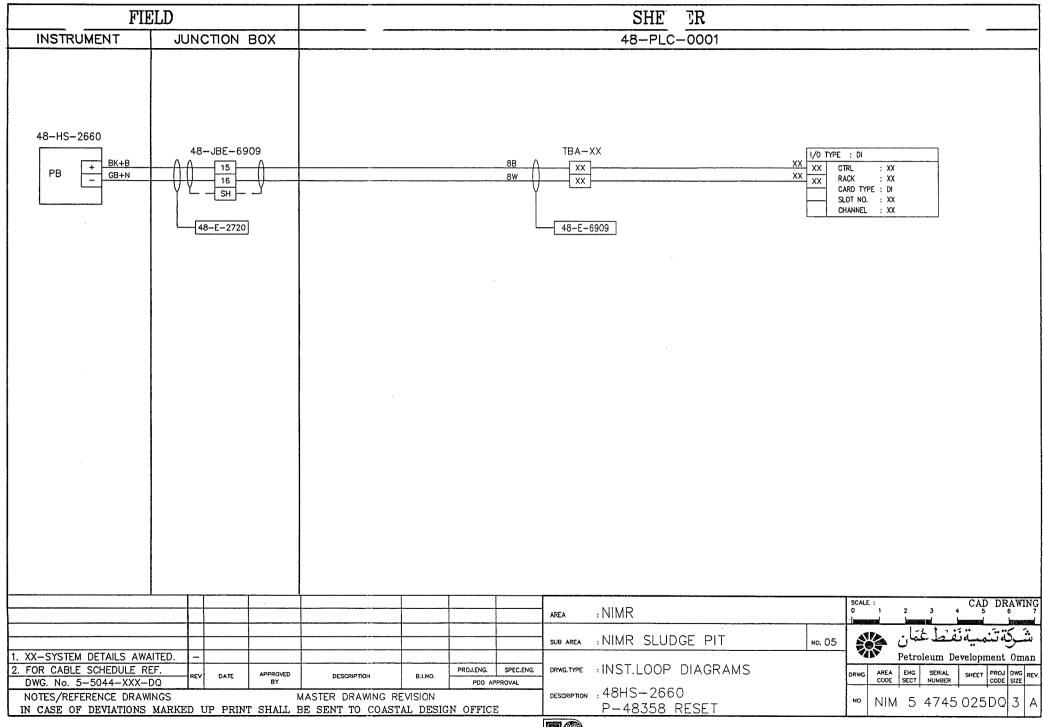


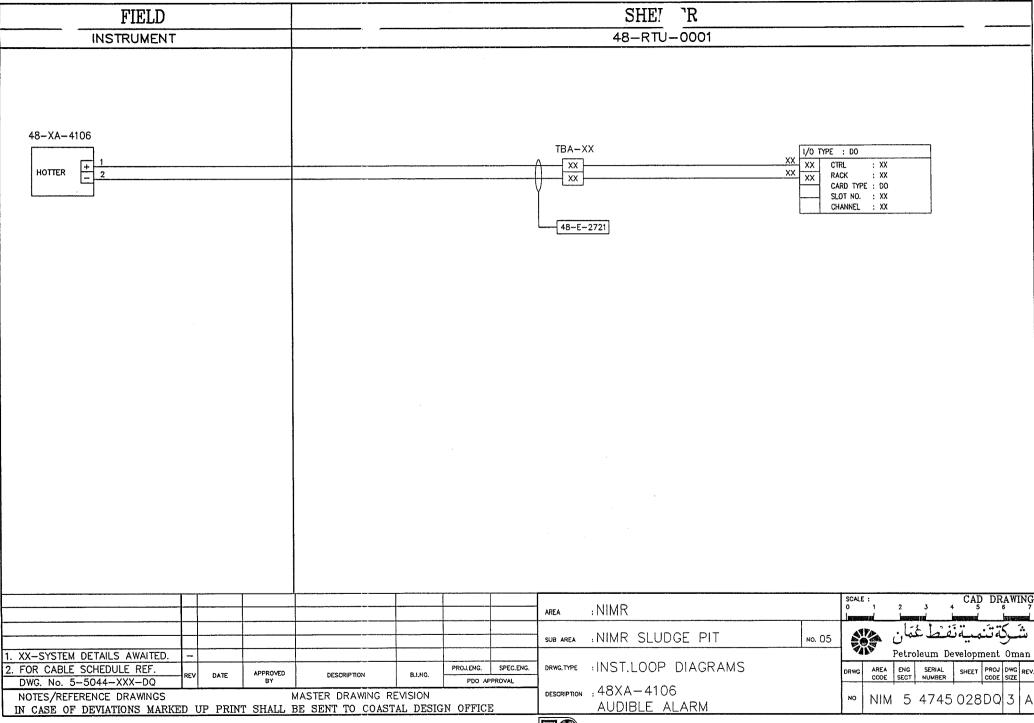


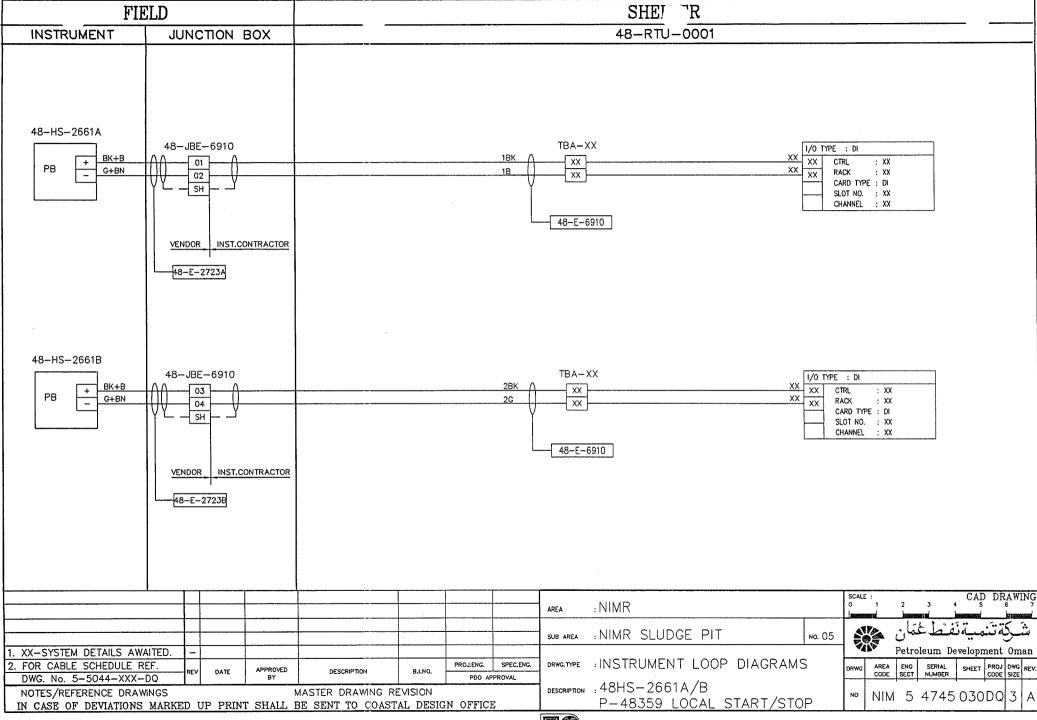


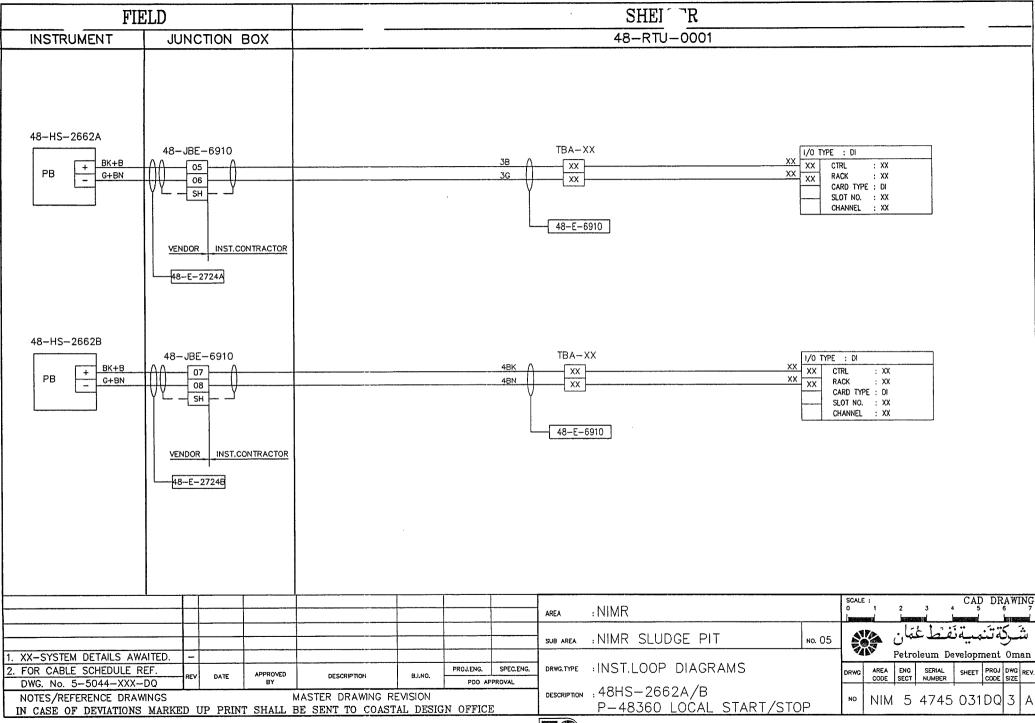


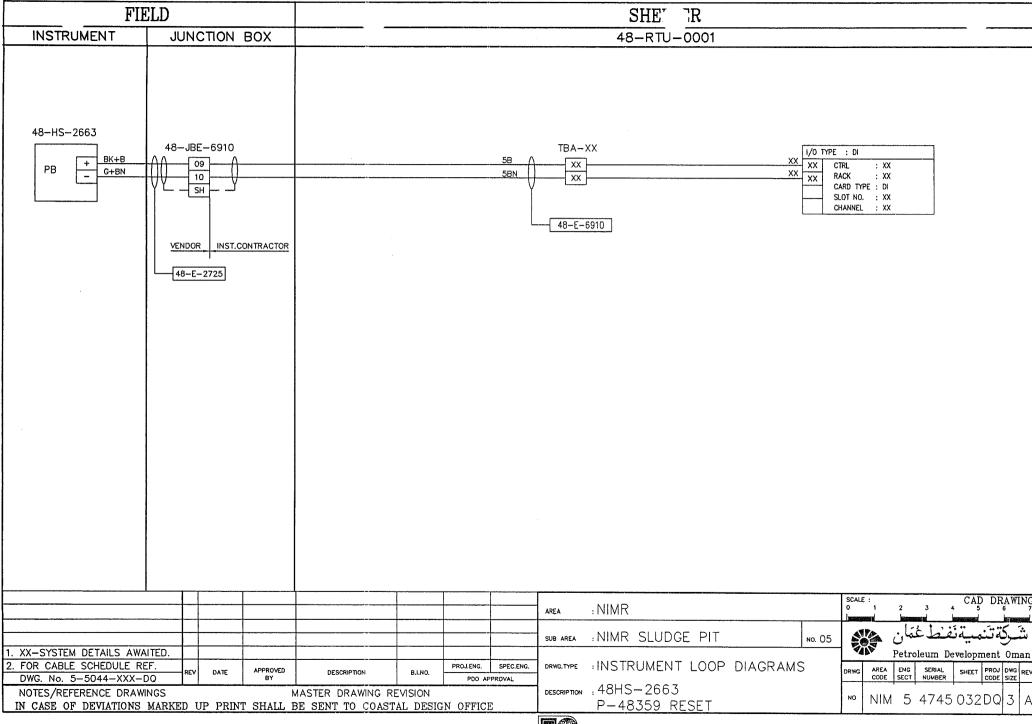


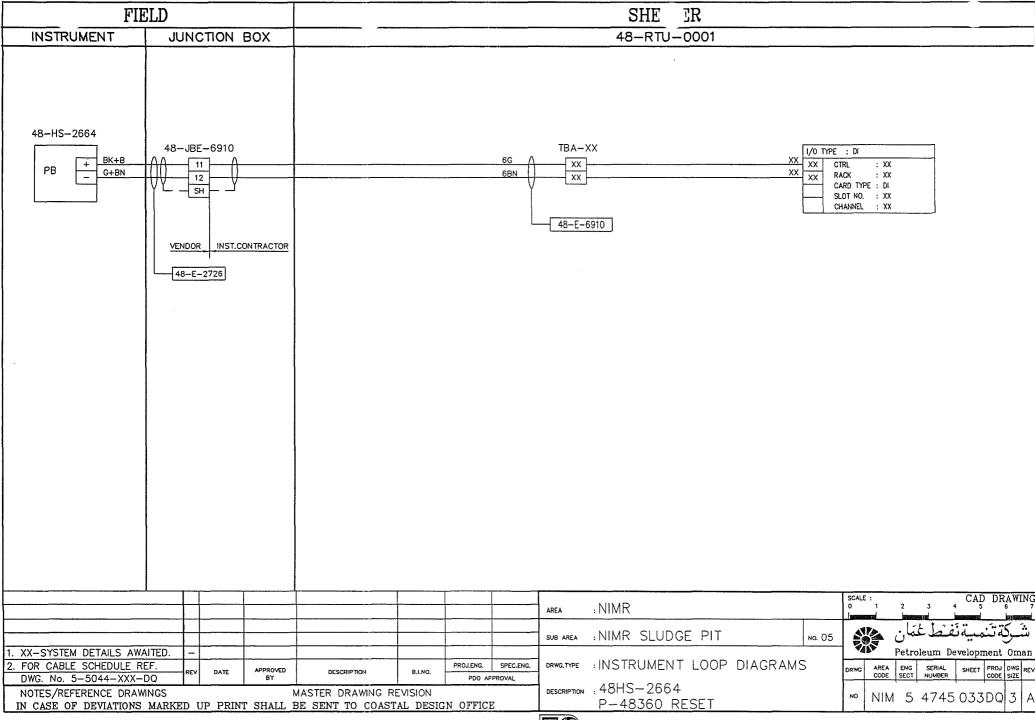


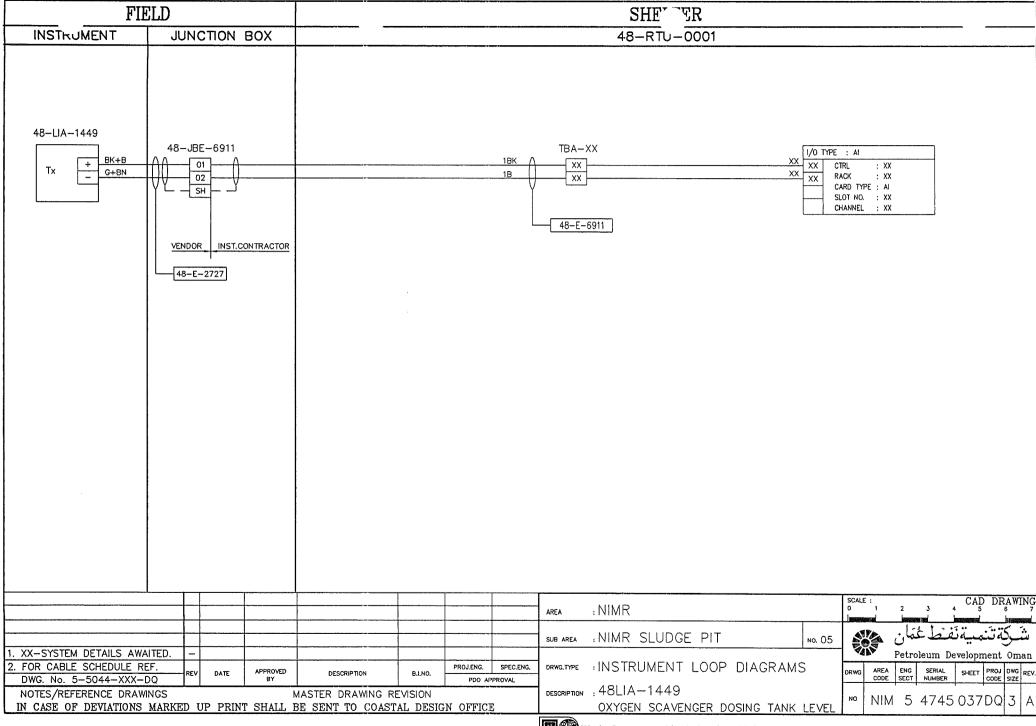


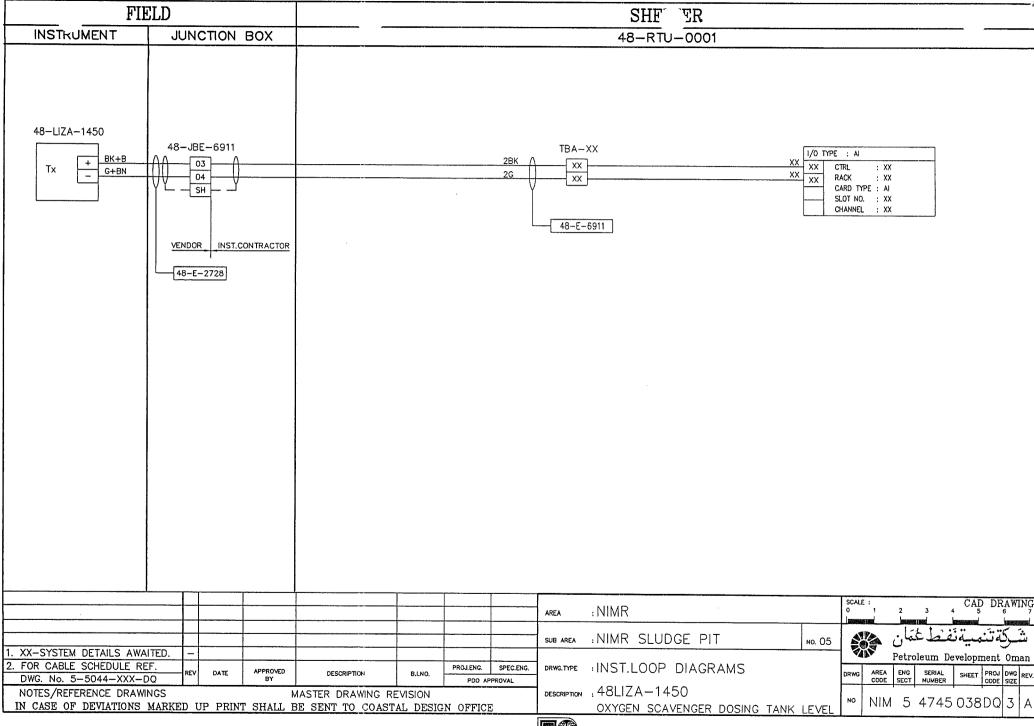


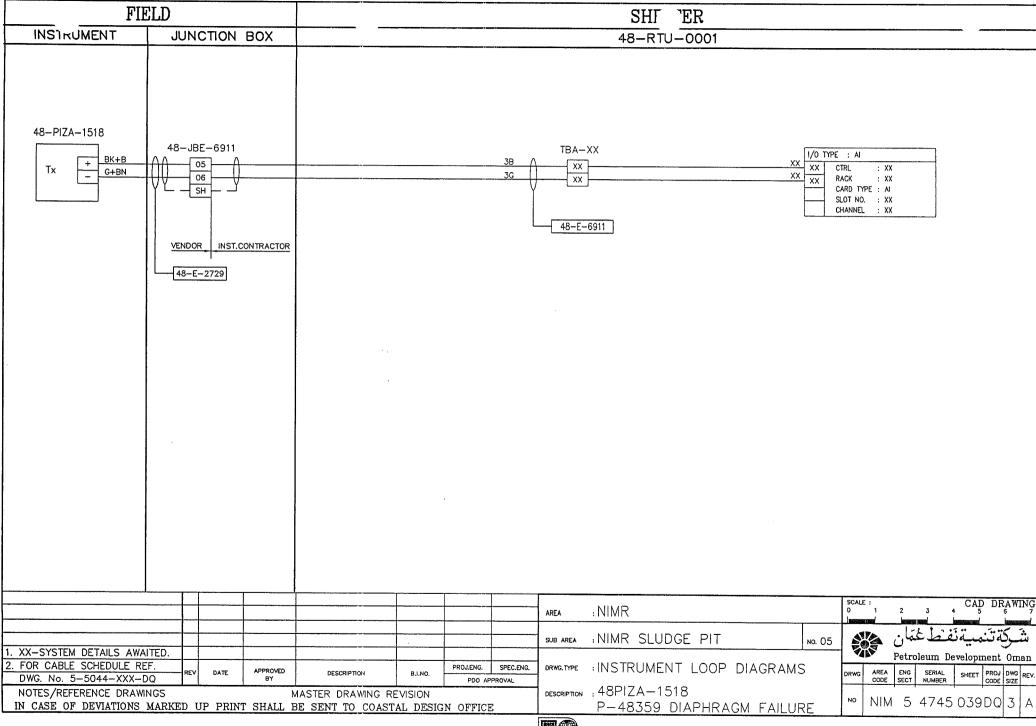


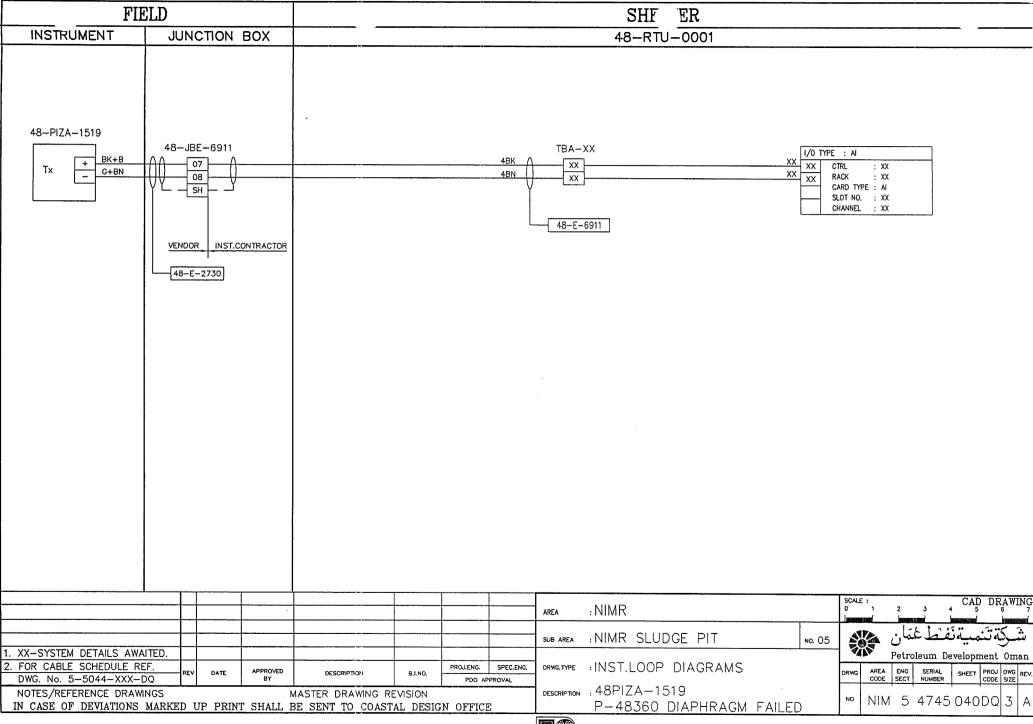


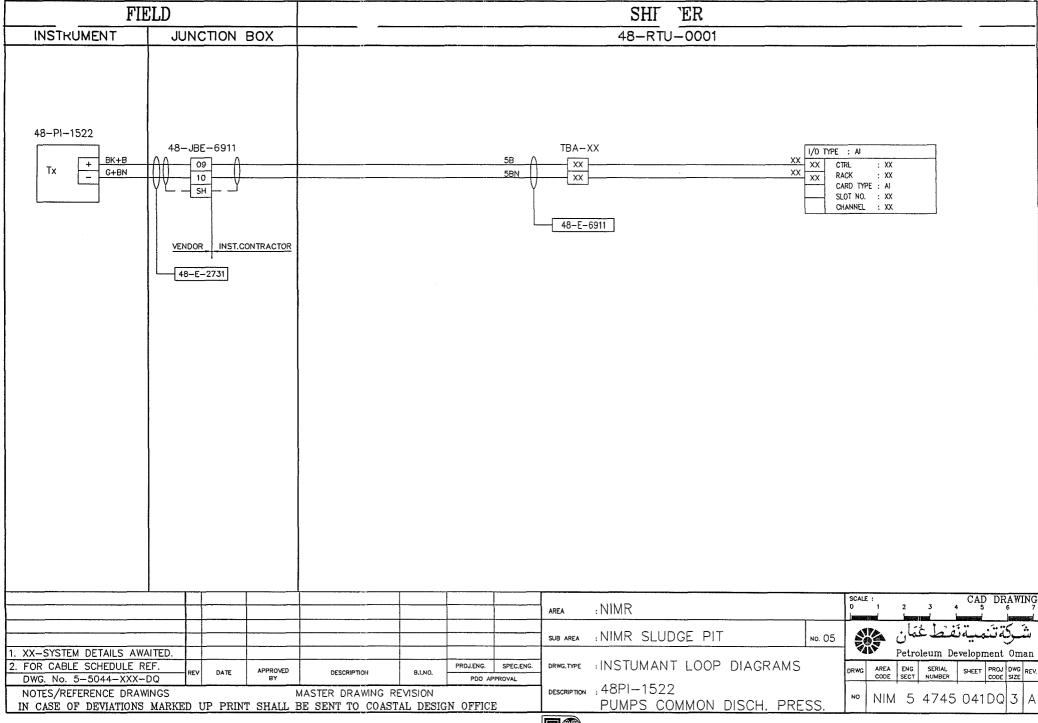


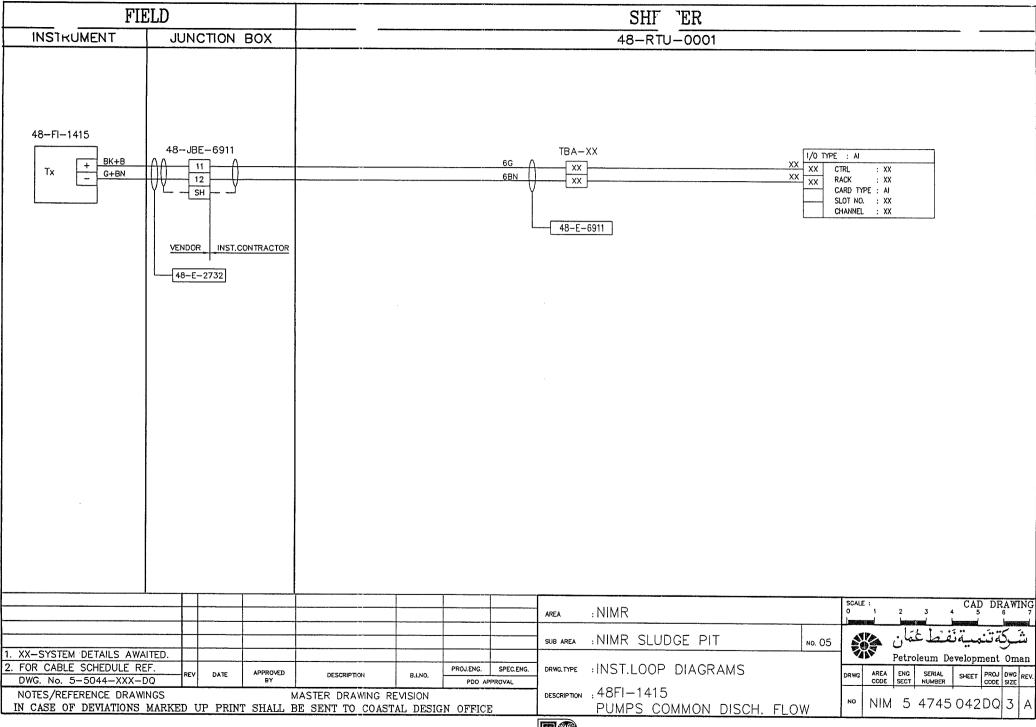


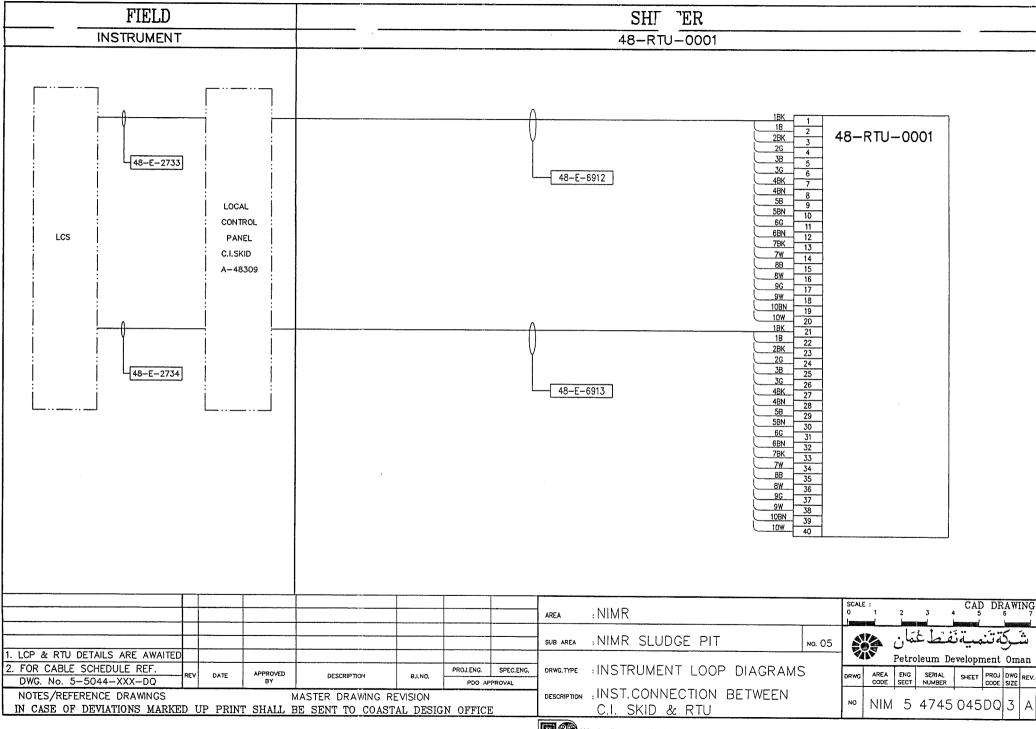


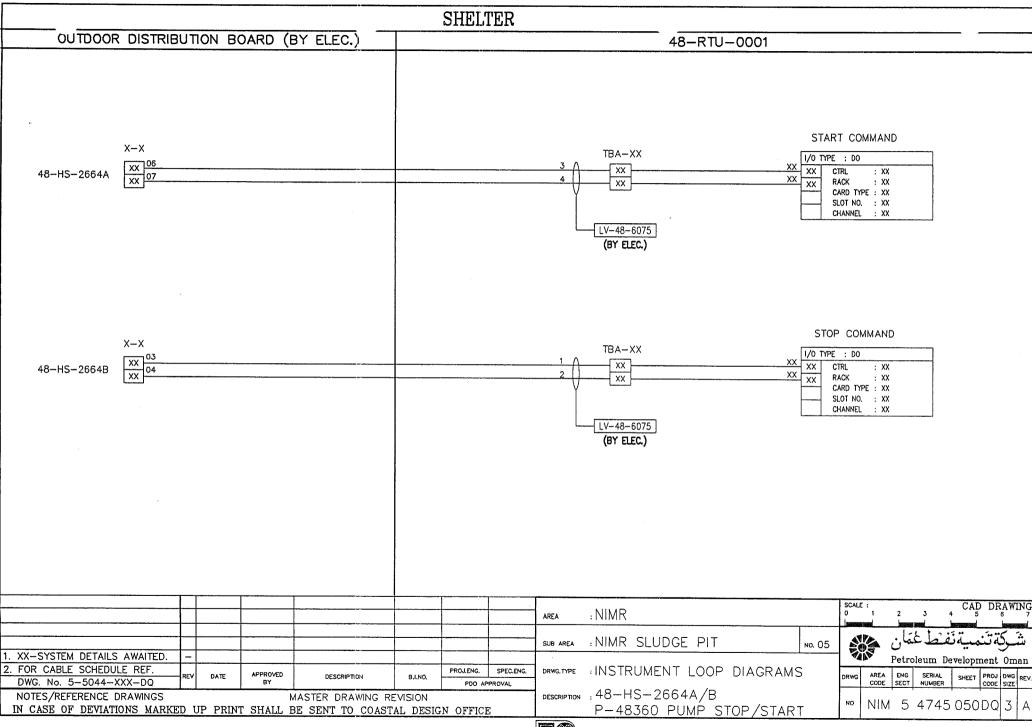


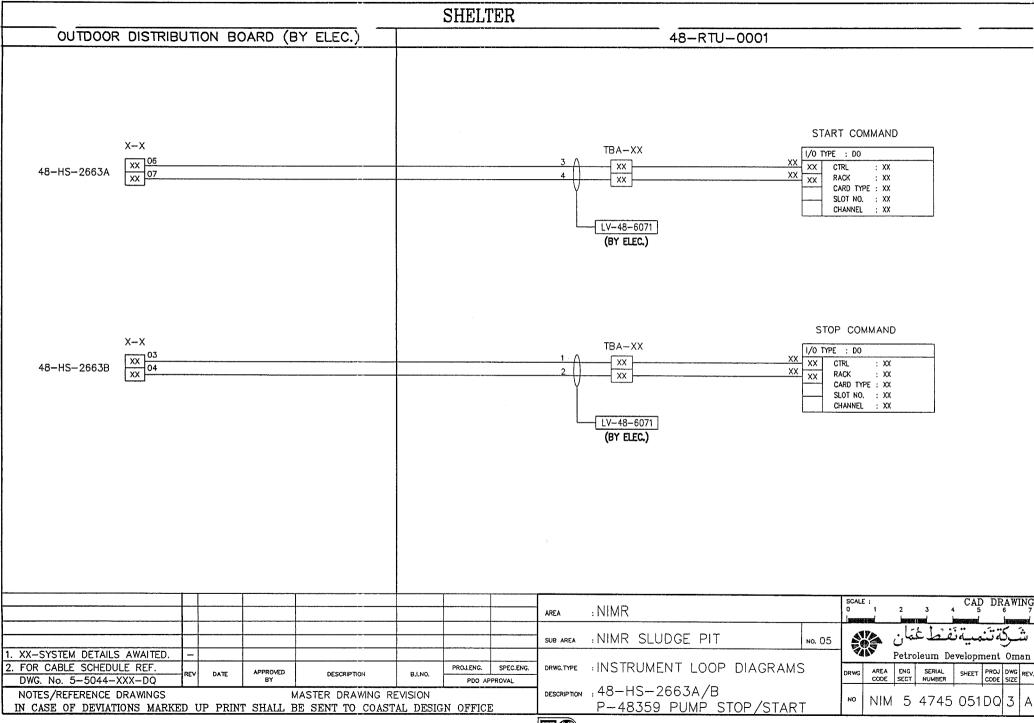


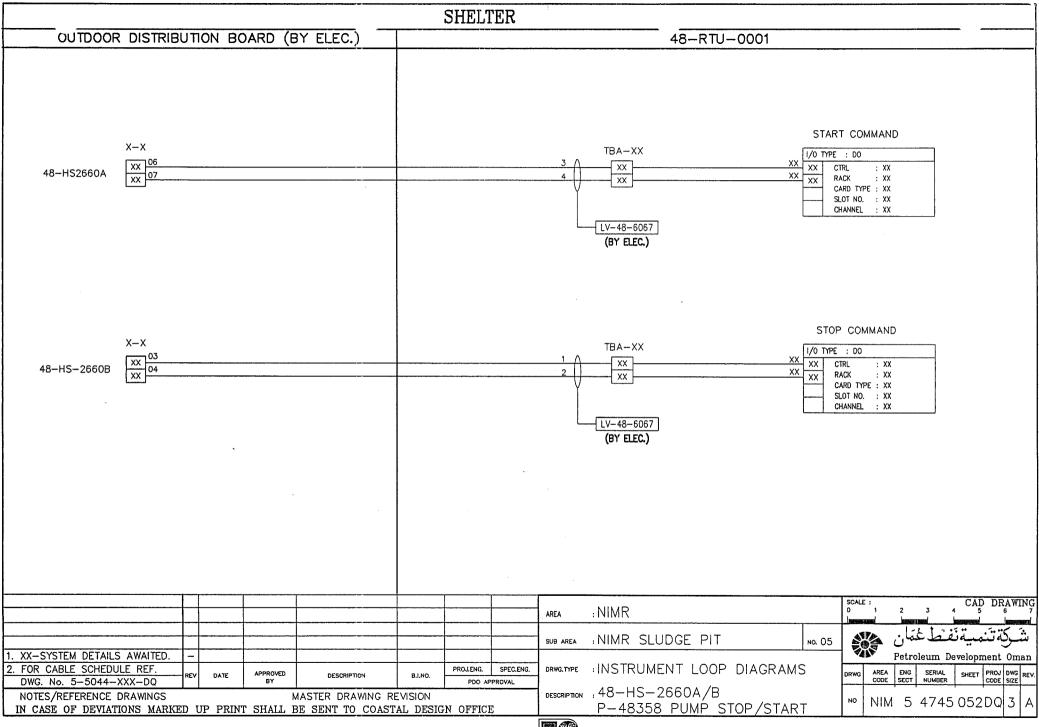


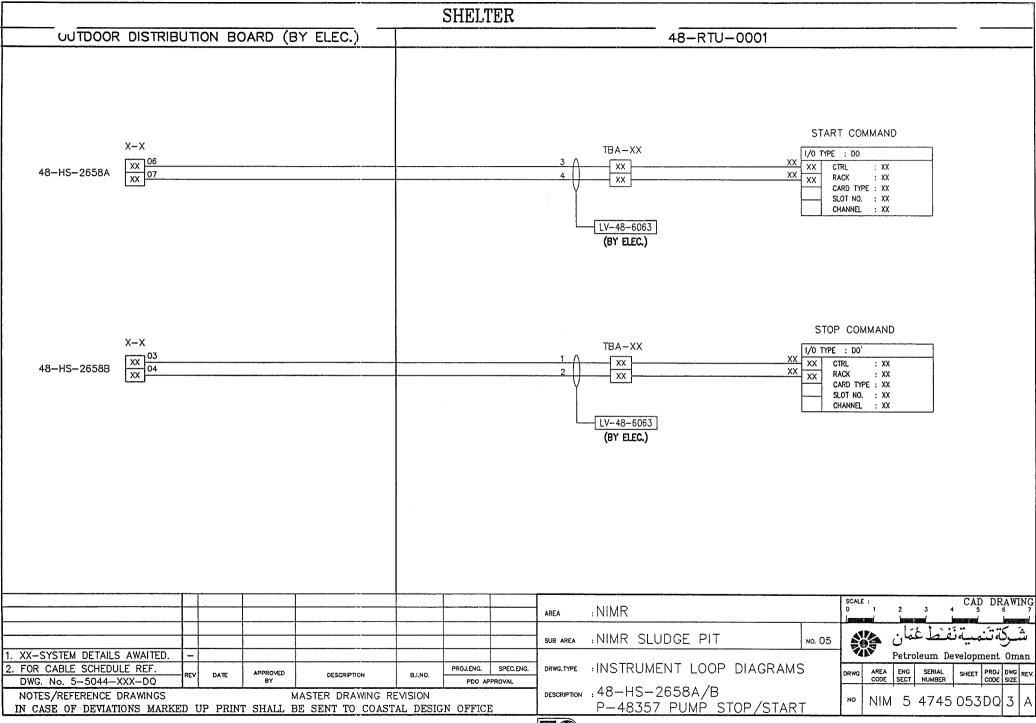


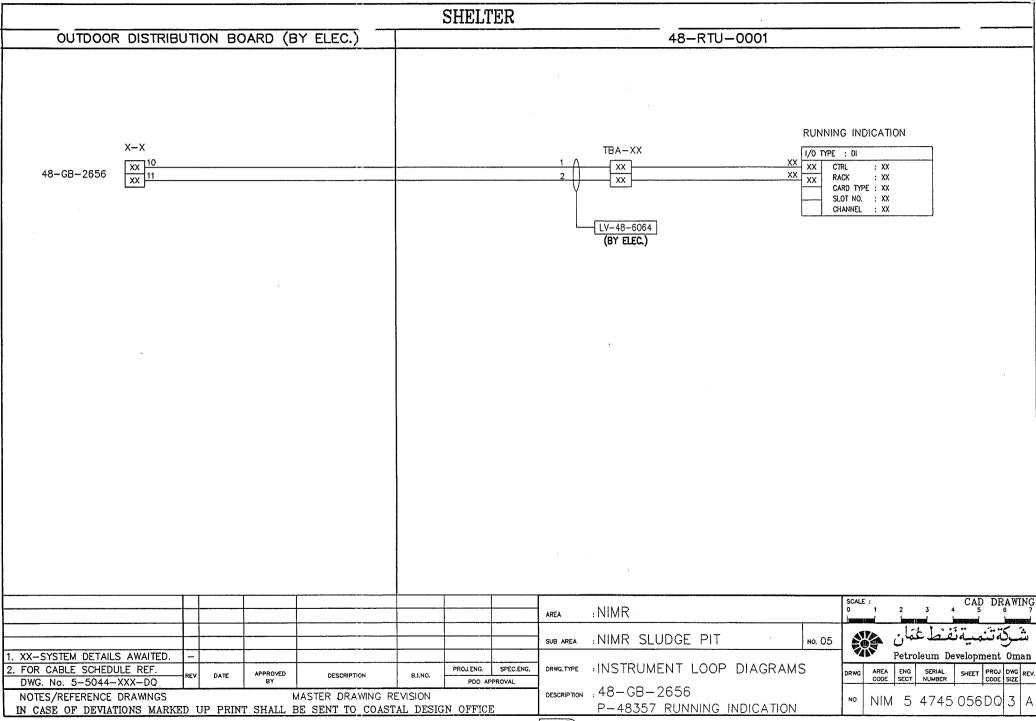


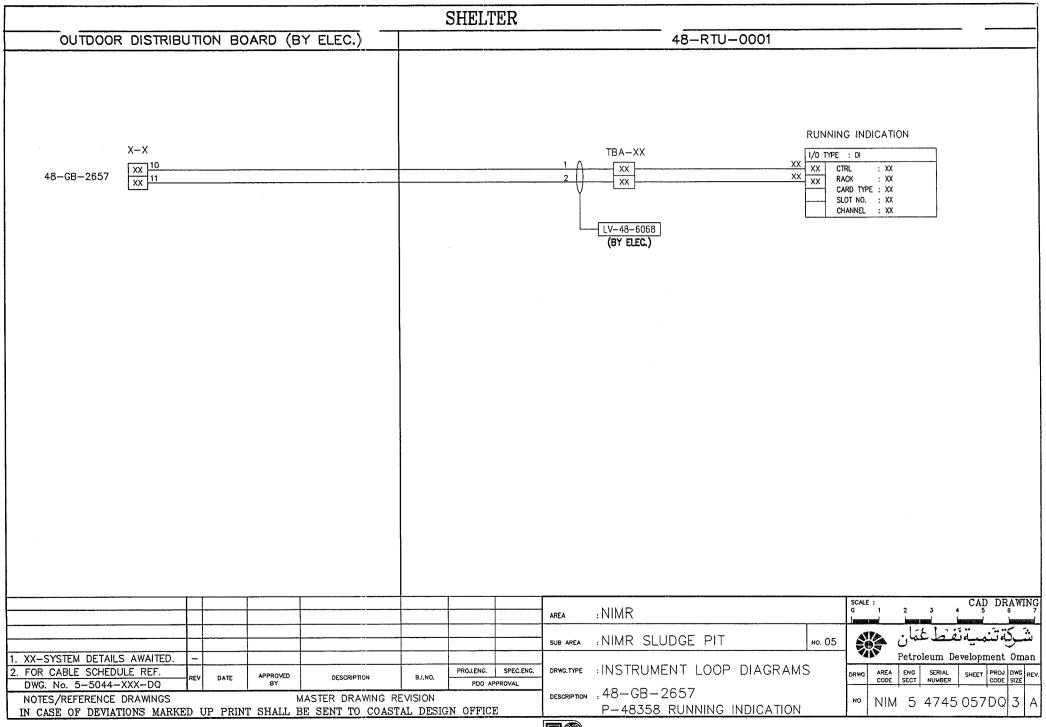


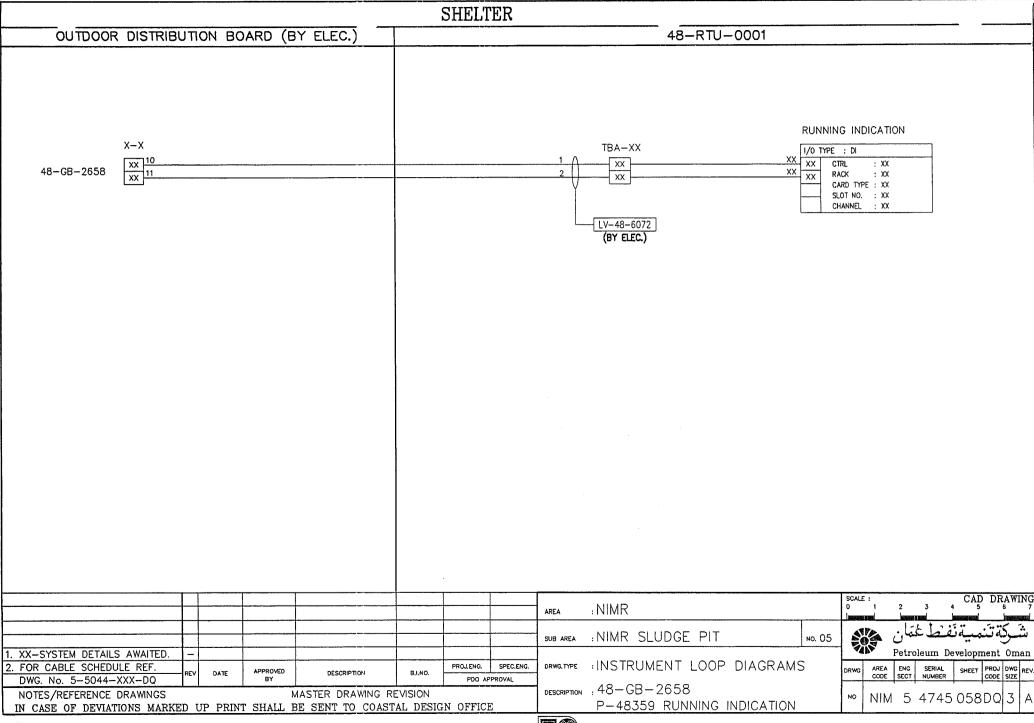


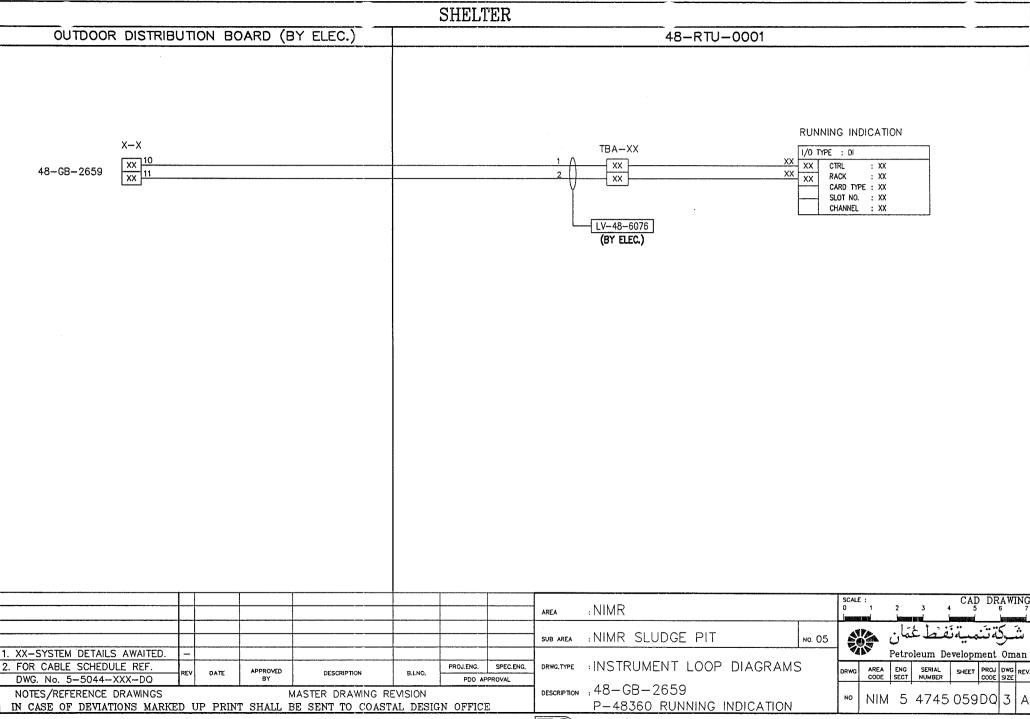












# SUMMARY OF INSTRUMENT INSTALLATION MATERIALS

#### APPROVED FOR CONSTRUCTION MAR.'11 KK APPROVED FOR CONSTRUCTION IN.09.011 OSE/23N 0 DEC, '10 Mrp KDA ISSUED FOR COMMENTS OSE / 23N IN.09.011 PROJ. ENG. DRAWN BY SIGNATURE DATE REV DESCRIPTION WBS NO. CHECKED P D O APPROVAL PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER : NIMR AREA .NIMR SLUDGE PIT NO. 05 SUB AREA Petroleum Development Oman INSTRUMENT INSTALLATION MATERIALS DRWG.TYPE **AREA** DWG PROJ SHEET REV. NUMBER CODE SIZE **COVER SHEET** NIM 5 4737 001DQ 4

| DESCRIPTION                         | SHEET    | REV. 0  | REV. A  | REV. B                                  | REV. C      | REV. D    | REV. E      |
|-------------------------------------|----------|---------|---------|-----------------------------------------|-------------|-----------|-------------|
| COVER SHEET                         | 001      |         | MAR.'11 |                                         |             |           |             |
| REVISION/INDEX SHEET                | 002      | DEC.'10 |         |                                         |             |           |             |
| SUMMARY OF INSTALLATION MATERIALS   | 003      | DEC.'10 | MAR.'11 |                                         |             |           |             |
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| SUB AREA : NIMR SLUDGE PIT          |          | но. 05  |         |                                         |             | **        |             |
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| DRWG.TYPE : INSTRUMENT INSTALLATION | MAIL     | KIALS   | DRWG A  | REA ENG                                 | SERIAL      | SHEET PRO | DJ DWG REV. |
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| L REVISION/INDEX SHEET              |          |         | NO N    | IM 5                                    | 4737        | 002 D     | 2 4 A       |
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| 2         | <u>L</u>             | 1000047736      | XX.XX.XX.XX                                     |                                                | CABLE XLPEI-MS-SWA-PVCS, BLACK                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 x2.5 mm2                            | Mtrs                                     | 250.00         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 3         | <u> </u>             | 1000405299      | XX.XX.XX.XXX.X                                  | <del> </del>                                   | CABLE XLPEI-MS-SWA-PVCS, BLACK                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 x 2 x 1.13 mm                       | Mtrs                                     | 1000.00        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4         | <u> </u>             | 1000405297      | XX.XX.XX.XXX.X                                  | 37.020                                         | CBL ELEC ARM FIRE 24V 10PAIR 0.5MM2           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10 x 2 x 0.8 mm                       | Mtrs                                     | 1300.00        | BS5308, PART 1, TYPE2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| 6         | X                    | 1000048276      | 68.80.58.068.1                                  | 27.440                                         | LOCK NUT                                      | BRASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M20                                   | Pcs                                      | 30.00          | D00040                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 7         | r<br>Santana         | 1000048277      | 68.80.58.072.9                                  | 37.110                                         | NUT LCK HEX BRASS MTR 25MM                    | BRASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M25                                   | Pcs                                      | 12.00          | BS3643                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 8         | AA                   | 1000048319      | 68.80.58.730.1                                  |                                                | CABLE GLAND 501/453-0                         | BRASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M20                                   | Pcs                                      | 53.00          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 9         | AB                   | 1000048321      | 68.80.58.734.1                                  | 37,110                                         | GLND CBL W/FLMPROF PVC SWA BS6121/25          | BRASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | M25                                   | Pcs                                      | 12.00          | BS6121, TYPE E1 WF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 10        | AD                   | 1000048327      | 68.80.58.802.9                                  |                                                | GLND CBL ADPT 1/2"NPT 20MM                    | BRASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ½" NPTxM20                            | Pcs                                      | 8.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 11        | AP                   | 1000211202      | 74.13.10.069.9                                  |                                                | PIPE MET API 5L-B 40 DN50                     | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2"                                    | Mtrs                                     | 17.00          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 12        | AQ                   | 10000211233     | 74.13.12.103.9                                  |                                                | PIPE MET API 5L-B 40 DN80                     | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3"                                    | Pcs                                      | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Marin Str |                      |                 |                                                 | pacaragy Mysic                                 |                                               | or the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the | atti alla commerciato de constra      | thus a final comment                     |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13        | BP                   | 1000106870      | 76.30,15.052,1                                  |                                                | CAP PIPE BW WPB 80 DN50                       | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2"                                    | Pcs                                      | 7.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 14        | BQ                   | 1000053436      | 76.30.72.235.1                                  |                                                | REC BW WPB 40 DN80X50                         | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3" x 2"                               | Pcs                                      | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>1</b>  |                      |                 |                                                 |                                                |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | rain berauspallinger                     |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 15        | CC                   | 1000055943      | 76.39.27.152.9                                  | 37.320                                         | CONN TUBE CPT MAL 316 316 1/2X1/2"            | AISI 316                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1/2" NPT x 1/2" OD                    | Pcs                                      | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 16        | CF                   | 1000056003      | 76.39.67.040.1                                  | 37.320                                         | PLUG TUB CPT 316 1/4IN                        | AISI 316                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1/4" NPT                              | Pcs                                      | 22.00          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 17        | CJ                   | 1000062573      | 78.39,02,121,1                                  |                                                | FLAT BAR (6Mtrs LONG)                         | MILD STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 50 x 6 mm                             | Pcs                                      | 2.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 18        | CL                   | 1000062605      | 78.43.30.108.1                                  | <u> </u>                                       | STEEL PLATE (2000x1000x3)                     | MILD STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3mm THICK                             | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 19        | CM                   | 1000062606      | 78.43.30.116.1                                  |                                                | SHT PLT SLD MET 2000X1000 6MM                 | MILD STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6 mm THK                              | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 20        | CN                   | 1000062608      | 78.43.30,124.1                                  |                                                | SHT PLT SLD MET 2000X1000 10MM                | MILD STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 10 mm THK                             | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 21        | CQ                   | 1000062629      | 78.47.01.352.1                                  | 07.040                                         | ANGL MTL EQ STL 6M L50X50X6MM                 | MILD STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 50 x 50 x 6 mm                        | Pcs                                      | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 22        | CR                   | 1000051996      | 74.48.50.073.9                                  | 37.310                                         | TUBE MET INSTR 1/2IN 18SWG 0.048IN            | AISI 316                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1/2" OD                               | Mtrs                                     | 5.00           | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 23        | CY                   | 1000062961      | 81.01.77.192.1                                  |                                                | BLT HEX CL.8.8 COARSE 60MM M10                | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | M10 x 60 mm                           | Pcs                                      | 5.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 24        | DA                   | 1000062977      | 81.26.25.133.1                                  |                                                | BLT FND CL.4.6 MC 110MM M12                   | AARRON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                       |                                          |                | e editera di Collineazione della di                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 25        | DH                   | 1000062977      | 81,41,77,018,1                                  |                                                | NUT MTR CL.8 HEX ISO 724 M10                  | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | M12 x 110 mm                          | Pcs                                      | 20.00          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 26        | DU                   | 1000063819      | 81,26,86,022,9                                  |                                                | U-BOLT FOR 1/2" PIPE C/W NUTS & SPRING WASHER | CARBON STEEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | M10                                   | Pcs                                      | 5.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 27        | DV                   | 1000062987      | 81.26.86.040.9                                  |                                                | U-BOLT DN50                                   | AISI 316<br>AISI 316                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | M8<br>M10                             | Pcs<br>Pcs                               | 16.00<br>41.00 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 27        |                      | 1000002907      | 01.20.00,040.9                                  |                                                | O-BOLT DN30                                   | AISI STO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | INTO                                  | PCS                                      | 41.00          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 28        | EA                   | 1000048204      | 68.80.50.942.9                                  |                                                | CABLE TIES 12/BLACK                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 4x140 mm                              |                                          | NOTE-1         | ha mini kata kata terbahkan menganya dan salam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 29        | EB                   | 1000048103      | 68.79.02.004.9                                  |                                                | CARRIER STRIP BLACK 7 DIGITS                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 42.140 111111                         |                                          | NOTE-1         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 30        | EC                   | 1000048115      | 68.79.02.004.9                                  |                                                | CABLE MARKER TYPE KS                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 80                                    |                                          | NOTE-1         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 31        | ED                   | 1000062537      | 68.79.02.018.1                                  |                                                | PLAIN STRIP                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 250x19x1.6 mm                         |                                          | NOTE-1         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 32        | EE                   | 1000048112      | 68,79,02,018,1                                  |                                                | CORE MARKER MODLE ZS-5                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | D=1.5-2.0 mm                          |                                          | NOTE-1         | · · · · · · · · · · · · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 33        | EK                   | 1000047959      | 68,76,54,004,9                                  |                                                | CABLE CHANNEL 2M LONG                         | GI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 100 mm WIDE                           | Mtrs                                     | 100.00         | BS2989, GROUP2, CLASS-E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 34        | EO                   | 1000047964      | 68.76.54.052.9                                  |                                                | CABLE CHANNEL BEND 90 DEG.                    | GI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 100 mm WIDE                           | Pcs                                      | 50.00          | BS2989, GROUP2, CLASS-E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 35        | ES                   | 1000047982      | 68.76.81.024.9                                  |                                                | CABLE TILE                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1000x244x6 mm                         | Pcs                                      | 250.00         | 202003) 0/100/ 2/ 02/100 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|           |                      |                 | TENANTO AND AND AND AND AND AND AND AND AND AND |                                                |                                               | erfyrddiaidd dilleniaeth yr yr c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | and the property of the second second | 1. TE - TE - TE - TE - TE - TE - TE - TE | in his autor   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 36        |                      |                 |                                                 |                                                | NAME PLATE (AS PER NAME PLATE DETAILS)        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | (TYPE A & B)                          | Pcs                                      | NOTE-2         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 37        |                      |                 |                                                 |                                                | PRESSURE TRANSMITTER                          | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                     | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 38        |                      |                 |                                                 |                                                | PRESSURE GAUGE                                | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                     | Pcs                                      | 9.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 39        |                      |                 |                                                 |                                                | DIFFERENTIAL PRESSURE TRANSMITTER             | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                     | Pcs                                      | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 40        |                      |                 |                                                 |                                                | RADR LEVEL TRANSMITTER                        | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | Pcs                                      | 4.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 41        |                      |                 |                                                 |                                                | TEMPERATURE TRANSMITTER                       | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                     | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 42<br>43  |                      |                 | ***************************************         |                                                | ULTRASONC FLOW METER (STRAP-ON TYPE)          | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                     | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 44        |                      | 1000039291      | 60.04.69.302.9                                  |                                                | PNEUMATIC On-Off VALVE, RB, 6", 300#          | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 45        |                      | 1000039291      | 00.04.03.302.9                                  |                                                | PUSH BUTTON, EFS-110 HEAT DETECTOR            | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | Pcs<br>Pcs                               | 5.00<br>2.00   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 46        |                      |                 |                                                 |                                                | LEVEL GAUGE                                   | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | -                                     | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 47        |                      |                 |                                                 |                                                | HOOTER (AUDIBLE ALARM)                        | NOTE-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       | Pcs                                      | 1.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 48        |                      | 1000047918      | 68.76.40.014.9                                  |                                                | JUNCTION BOX EEX II T6                        | 1,0,2,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 20 TERMINALS                          | Pcs                                      | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 50        |                      |                 |                                                 |                                                | RTU WITH RADIO MODULE                         | NOTE-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | EG I LIMINIALO                        | 1 00                                     | 3.00           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 51        |                      |                 |                                                 |                                                | GATEWAY                                       | NOTE-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                       |                                          | +              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |                      |                 |                                                 |                                                | O BE SUPPLIED BY CONSTRUCTION CONTRACTOR.     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                                          |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |                      |                 | No. NIM -5-4739-DQ-                             |                                                |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                                          |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|           |                      |                 | ATION PREPARED U                                | NDER THIS P                                    | ROJECT.                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                                          |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Į N       | <u>∪12-4:F</u>       | REE ISSUE BY PI | JU J                                            |                                                |                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                                          | 1              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

# INSTRUMENT ENGINEERING DATA SHEETS NIMR SLUDGE PIT AREA

Vendor défails te be provided

15/4/2011

APPROVED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION MAR.'11 OSE/23N IN.09.011 Hilal PT KEYA ISSUED FOR COMMENTS DEC.'10 IN.09.011 OSE/23N THIS COMPLETE DRAWING IS NEW PROJ. ENG. SIGNATURE DRAWN BY REV DESCRIPTION AND FORMS PART OF SCOPE OF P D O APPROVAL PROJECT WBS. No. NIM.IN.09.011 PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER : NIMR NIMR SLUDGE PIT INSTR. ENGINNERING DATA SHEET PROJENG. SPECLENG. APPROVED DATE BJJ.NO. PDO APPROVAL DESCRIPTION : COVER SHEET NOTES/REFERENCE DRAWINGS MASTER DRAWING REVISION NIM 5 4743000 DO IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

|          |                                                   |            | Gro                                              | up 30           |          |             |                    |                        | Gro                       | up 31             |                                                  | 1          | Grou          | р 32       |                                | Gro          | up 33                  |            | Gro                | up 3           |               |            |                        |            | Grou              | р 35       |                    |                     |                   | rou        | ıp 36                                   |
|----------|---------------------------------------------------|------------|--------------------------------------------------|-----------------|----------|-------------|--------------------|------------------------|---------------------------|-------------------|--------------------------------------------------|------------|---------------|------------|--------------------------------|--------------|------------------------|------------|--------------------|----------------|---------------|------------|------------------------|------------|-------------------|------------|--------------------|---------------------|-------------------|------------|-----------------------------------------|
|          |                                                   | ir         |                                                  | neral<br>nentat | ion      |             |                    | s                      | Analy<br>undry            | ser an<br>instrur | d<br>nents                                       |            | ow<br>ents 1) |            | low<br>ument                   | L<br>s instr | evel<br>ument          |            | ssure<br>uges      | Pres<br>instru | sure<br>ments |            | point<br>dicator       |            | erature<br>ıments |            | temp<br>ators      | Thern               | nowells           |            | ntrol<br>Ives                           |
|          |                                                   | Sheet R    | evision                                          |                 | Revision |             |                    | n Sheet                | Revision                  |                   | Revision                                         |            | Revision      |            | Revision                       |              | Revisio                |            | Revision           |                |               | Sheet      | Revision               |            | Revision          |            | Revision           |                     | Revision          |            | Revision                                |
| 000 0    |                                                   | 050        | <del>                                     </del> | 100             | - - -    | 150         | 0 A                | 200                    | $+\!+\!$                  | 250               |                                                  | 300        |               | 350<br>351 |                                | 400<br>401   | 0 A                    | 500<br>501 | 0 A                | 550 (<br>551 ( | 0 4           | 600<br>601 | ++                     | 625<br>626 | 0 A               | 650<br>651 | +                  | 675<br>676          |                   | 700<br>701 | -+                                      |
| 001 0    | 1                                                 | 051<br>052 | ++-                                              | 101             | ++       | 151<br>152  | +++                | 201                    | +                         | 251<br>252        |                                                  | 302        | <del></del>   | 352        | $\dashv$                       | 402          | ++                     | 502        | ++                 | 552            | 4             | 602        | ++                     | 627        | ++-               | 652        |                    | 677                 |                   | 702        | ++-                                     |
| 003      |                                                   | 053        |                                                  | 103             |          | 153         |                    | 203                    |                           | 253               |                                                  | 303        |               | 353        |                                | 403          |                        | 503        |                    | 553            |               | 603        |                        | 628        |                   | 653        | 世                  | 678                 |                   | 703        |                                         |
| 004      | Ш                                                 | 054        | Щ                                                | 104             |          | 154         | Ш                  | 204                    |                           | 254               |                                                  | 304        |               | 354        |                                | 404          | $\perp$                | 504        | $\bot$             | 554            |               | 604        |                        | 629        |                   | 654        | $\perp \downarrow$ | 679                 |                   | 704        | $\perp \perp \perp$                     |
| 005      |                                                   | 055        | ₩-                                               | 105             | ++       | 155         | +++                | 205                    | ++                        | 255               |                                                  | 305        |               | 355        | $\dashv$                       | 405          | ++                     | 505        | ++                 | 555            |               | 605        | ++                     | 630        |                   | 655        | ++                 | 680                 | ++                | 705<br>706 | +++                                     |
| 006      | ╁                                                 | 056<br>057 | ₩                                                | 106             | +        | 156<br>157  | ╂╼╂╼╂              | 206                    |                           | 256<br>257        | +                                                | 306<br>307 |               | 356<br>357 |                                | 406<br>407   | -+-+                   | 506<br>507 | +                  | 556<br>557     | ++            | 606<br>607 | ++                     | 631<br>632 |                   | 656<br>657 | $\dashv \dashv$    | 681<br>682          | <del>-  -  </del> | 707        |                                         |
| 008      | +                                                 | 058        | ++-                                              | 108             | ++-      | 158         | <del>       </del> | 208                    | +                         | 258               |                                                  | 308        | +             | 358        |                                | 408          | ++                     | 508        | $\dashv \dashv$    | 558            | 1-1-          | 608        | 11                     | 633        |                   | 658        | 11                 | 683                 | 11                | 708        |                                         |
| 009      |                                                   | 059        |                                                  | 109             |          | 159         |                    | 209                    |                           | 259               |                                                  | 309        |               | 359        |                                | 409          |                        | 509        |                    | 559            |               | 609        |                        | 634        |                   | 659        |                    | 684                 |                   | 709        |                                         |
| 010 0    | Α                                                 | 060        | Щ                                                | 110             | $\perp$  | 160         | $\Box$             | 210                    |                           | 260               |                                                  | 310        |               | 360        | $\dashv \dashv$                | 410          | -44                    | 510        | $\dashv$           | 560            |               | 610        |                        | 635        | _ _ _             | 660        |                    | 685                 |                   | 710        | $\dashv$                                |
| 011      | ₩                                                 | 061        | $\vdash$                                         | 111<br>112      | +        | 161         | ╁╌╁╌┧              | 211<br>212             | - - -                     | 261<br>262        | +                                                | 311        |               | 361<br>362 |                                | 411          |                        | 511<br>512 |                    | 561<br>562     | ++            | 611<br>612 | ++                     | 636<br>637 | <del></del>       | 661<br>662 |                    | 686<br>687          | ++                | 711<br>712 |                                         |
| 012      | <del>[                                     </del> | 063        | ++-                                              | 113             |          | 163         | <del>   - </del>   | 213                    | ++                        | 263               | ++                                               | 313        |               | 363        | $\dashv$                       | 413          | ++                     | 513        |                    | 563            |               | 613        | ++                     | 638        |                   | 663        |                    | 688                 |                   | 713        |                                         |
| 014      |                                                   | 064        | 11                                               | 114             | 11       | 164         | 111                | 214                    | $\top$                    | 264               |                                                  | 314        |               | 364        |                                | 414          |                        | 514        |                    | 564            | 11            | 614        |                        | 639        |                   | 664        |                    | 689                 |                   | 714        |                                         |
| 015      |                                                   | 065        |                                                  | 115             |          | 165         |                    | 215                    |                           | 265               |                                                  | 315        | Ш             | 365        |                                | 415          | Ш                      | 515        | $\Box$             | 565            |               | 615        |                        | 640        |                   | 665        | $\Box$             | 690                 |                   | 715        |                                         |
| 016      | ╀╌┞╌                                              | 066        | ₩.                                               | 116             |          | 166         |                    | 216                    | +                         | 266               |                                                  | 316        |               | 366        |                                | 416<br>417   | $\dashv$               | 516        |                    | 566            | ++            | 616        | ++                     | 641        | ++                | 666        |                    | 691                 | -++               | 716        |                                         |
| 017      | ₩                                                 | 067<br>068 | ₩                                                | 117<br>118      |          | 167<br>168  | ╂┼┼┼               | 217<br>218             |                           | 267<br>268        |                                                  | 317<br>318 |               | 367<br>368 |                                | 418          | $\dashv$               | 517<br>518 | ++                 | 567<br>568     | ++            | 617<br>618 | ++-                    | 642<br>643 | ++                | 667<br>668 | ++                 | 692<br>693          | ++                | 718        | +++                                     |
| 019      | <del>                                     </del>  | 069        | +                                                | 119             |          | 169         | +++                | 219                    |                           | 269               |                                                  | 319        |               | 369        | -1                             | 419          | $\Box$                 | 519        |                    | 569            | ++            | 619        | ++                     | 644        | ++-               | 669        | $\dashv \dagger$   | 694                 | ++-               | 719        | $\dashv$                                |
| 020      |                                                   | 070        |                                                  | 120             |          | 170         |                    | 220                    |                           | 270               |                                                  | 320        |               | 370        |                                | 420          |                        | 520        |                    | 570            |               | 620        |                        | 645        |                   | 670        |                    | 695                 |                   | 720        |                                         |
| 021      |                                                   | 071        |                                                  | 121             |          | 171         |                    | 221                    |                           | 271               |                                                  | 321        |               | 371        | $\Box$                         | 421          |                        | 521        |                    | 571            | $\bot$        | 621        | $\perp$                | 646        |                   | 671        |                    | 696                 |                   | 721        |                                         |
| 022      |                                                   | 072        |                                                  | 122             |          | 172         | +++                | 222                    | ++                        | 272<br>273        |                                                  | 322<br>323 |               | 372<br>373 | $\vdash$                       | 422<br>423   | $\vdash$               | 522<br>523 |                    | 572            |               | 622        | ++                     | 647        | ++-               | 672        | $\dashv$           | 697                 |                   | 722<br>723 |                                         |
| 023      | +                                                 | 073        | ++                                               | 123<br>124      | +++      | 173<br>174  | ++-                | 223                    | ++                        | 274               |                                                  | 324        | ++            | 374        | ┝┼┼                            | 424          | $\vdash$               | 523        | ++                 | 573<br>574     | ++            | 623<br>624 | ++                     | 648<br>649 | $\dashv +$        | 673<br>674 | $\dashv$           | 698<br>699          | ++                | 724        |                                         |
| 025      | ++-                                               | 075        | ++-                                              | 125             | ++       | 175         | +++                | 225                    |                           | 275               |                                                  | 325        |               | 375        | $\vdash$                       | 425          |                        | 525        | $\dashv$           | 575            |               | 1021       |                        | 1010       |                   | 107.       |                    | 1000 1              |                   | <u>,</u>   |                                         |
| 026      |                                                   | 076        |                                                  | 126             |          | 176         |                    | 226                    |                           | 276               |                                                  | 326        |               | 376        |                                | 426          |                        | 526        |                    | 576            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 027      |                                                   | 077        |                                                  | 127             |          | 177         |                    | 227                    | $\perp \perp$             | 277               | $\perp$                                          | 327        | +             | 377        | $\sqcup \!\! \perp \!\! \perp$ | 427          | $\Box$                 | 527        |                    | 577            |               |            |                        |            |                   |            |                    |                     |                   |            | ŀ                                       |
| 028      | ₩                                                 | 078        | ┼┼                                               | 128<br>129      |          | 178_<br>179 | +                  | 228<br>229             | +                         | 278<br>279        |                                                  | 328<br>329 |               | 378<br>379 | H - H                          | 428<br>429   | $\vdash$               | 528<br>529 | $+\!+$             | 578<br>579     |               |            |                        |            |                   |            |                    |                     |                   |            | 1                                       |
| 030      | $\vdash$                                          | 080        | ++                                               | 130             |          | 180         | ++-                | 230                    | ++                        | 280               |                                                  | 330        | ++-           | 380        | H - I                          | 430          | $\vdash$               | 530        | +                  | 580            |               |            |                        |            |                   |            |                    |                     |                   |            | l                                       |
| 031      | † †                                               | 081        | 11                                               | 131             | 11       | 181         | 111                | 231                    | -1-1                      | 281               |                                                  | 331        |               | 381        |                                | 431          |                        | 531        |                    | 581            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 032      |                                                   | 082        |                                                  | 132             |          | 182         |                    | 232                    |                           | 282               |                                                  | 332        |               | 382        |                                | 432          |                        | 532        |                    | 582            |               |            |                        |            |                   |            |                    |                     |                   |            | ł                                       |
| 033      |                                                   | 083        | <del>                                     </del> | 133             | $\dashv$ | 183         | $\perp \perp \mid$ | 233                    | $\dashv \perp$            | 283               |                                                  | 333        |               | 383        | $\sqcup \sqcup$                | 433          | $\vdash$               | 533        | $\dashv$           | 583            |               |            |                        |            |                   |            |                    |                     |                   |            | 1                                       |
| 034      | ++                                                | 084        | ╁┼                                               | 134<br>135      |          | 184<br>185  |                    | 23 <del>4</del><br>235 | ++                        | 284<br>285        | ┝┼┼                                              | 334<br>335 |               | 384<br>385 | ┝╌┼╌┼                          | 434          | ┝╌┼╌┤                  | 534<br>535 | +                  | 584<br>585     |               |            |                        |            |                   |            |                    |                     |                   |            | 1                                       |
| 036      |                                                   | 086        | ++-                                              | 136             | +        | 186         | +++                | 236                    |                           | 286               | $\vdash$                                         | 336        | ++-           | 386        | $\vdash$                       | 436          | $\vdash$               | 536        | $\dashv \dashv$    | 586            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 037      |                                                   | 087        |                                                  | 137             |          | 187         |                    | 237                    |                           | 287               |                                                  | 337        |               | 387        |                                | 437          |                        | 537        |                    | 587            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 038      |                                                   | 088        |                                                  | 138             |          | 188         | $\perp$            | 238                    | $\rightarrow$             | 288               |                                                  | 338        |               | 388        |                                | 438          |                        | 538        |                    | 588            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 039      | ╀                                                 | 089        | +-                                               | 139             | $\dashv$ | 189         | +                  | 239                    | +                         | 289               | ┝╌┼╌├╴                                           | 339        |               | 389        | $\vdash$                       | 439          | $\vdash$               | 539        | $\dashv$           | 589            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 040      | +                                                 | 090        | +                                                | 140             | ++       | 190         | +                  | 240<br>241             | +                         | 290<br>291        | <del>                                     </del> | 340<br>341 | ++            | 390<br>391 | +++                            | 440<br>441   | ┝┼┤                    | 540<br>541 | $\dashv \dashv$    | 590<br>591     |               |            |                        |            |                   |            |                    |                     |                   |            | ł                                       |
| 042      |                                                   | 092        | 1-1-                                             | 142             | 11       | 192         | +                  | 242                    | $\perp \uparrow \uparrow$ | 292               |                                                  | 342        |               | 392        | ╚                              | 442          |                        | 542        |                    | 592            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 043      |                                                   | 093        | $\Box$                                           | 143             |          | 193         | П                  | 243                    | $\Box$                    | 293               |                                                  | 343        |               | 393        |                                | 443          |                        | 543        |                    | 593            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 044      | 11-                                               | 094        | ₩.                                               | 144             | $\dashv$ | 194         | +                  | 244                    |                           | 294               | <del></del>                                      | 344        |               | 394        | $\longrightarrow$              | 444          | $\vdash \vdash \vdash$ | 544        | $\dashv$           | 594            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 045      | ╁┼                                                | 095        | ╁┼╌                                              | 145<br>146      |          | 195<br>196  | ++-                | 245<br>246             | ++                        | 295<br>296        | $\vdash$                                         | 345<br>346 |               | 395<br>396 | ╂═┼═╂                          | 445<br>446   | $\vdash$               | 545<br>546 | $\dashv$           | 595<br>596     |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 047      | ++                                                | 097        | ++-                                              | 147             | ++       | 197         | ++-                | 247                    | $\dashv$                  | 297               |                                                  | 347        | $\dashv$      | 397        | $\vdash$                       | 447          | +++                    | 547        |                    | 597            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 048      |                                                   | 098        |                                                  | 148             |          | 198         |                    | 248                    |                           | 298               |                                                  | 348        |               | 398        |                                | 448          |                        | 548        |                    | 598            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| 049      |                                                   | 099        |                                                  | 149             |          | 199         |                    | 249                    |                           | 299               |                                                  | 349        |               | 399        | $\sqcup \sqcup$                | 449          | ш                      | 549        | $oldsymbol{\perp}$ | 599            |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |
| <u> </u> |                                                   |            |                                                  |                 |          |             |                    | REMA                   | RKS                       |                   |                                                  |            |               |            |                                |              |                        | N          | IIMR               |                |               |            |                        |            |                   | SCALE      | :<br>1             | 2 3                 | 4                 | 5          | 6 7                                     |
| 1) In    | clude                                             | restr      | <u>iction</u>                                    | orific          | es (RO   | )           |                    |                        |                           |                   |                                                  |            |               |            |                                |              | AREA                   | : 1\       | HIVITY             |                |               |            |                        |            |                   | Immu       | <b>-</b>           | _أسعبرل             | <u> </u>          |            | السوا                                   |
|          |                                                   | <u> </u>   |                                                  |                 |          |             |                    |                        |                           |                   |                                                  |            |               |            |                                |              |                        | NI         | IMP                | SLUDG          | E DI          | Т          |                        |            |                   |            |                    | ل غمًا ر            | تهنقت             | أتنمد      | ا شک                                    |
| <u> </u> |                                                   | 4          | 4                                                |                 |          |             |                    |                        |                           |                   |                                                  |            |               |            |                                |              | SUB A                  | REA ; IV   | HIAFLY             | <u> </u>       | 'L I I        |            |                        |            | но. 05            |            |                    | _                   | •                 | •          | <u> </u>                                |
| $\perp$  |                                                   | ļ          | $\bot$                                           | ــــ            |          |             |                    |                        |                           |                   |                                                  |            |               |            |                                |              |                        | 18         | UCTE               | ENIO           | NEEL          | OINIC      | $\Gamma$ $\Lambda$ $T$ | л сп       | CCT               | 741        |                    | etroleur            |                   |            |                                         |
| REV      | DATE                                              | DRAWN      |                                                  | J.ENG.          |          |             |                    | DESCRIPTION            |                           |                   |                                                  | NO -       | PROJ. ENG     |            | IATURE                         |              | DRWG.                  | TYPE : II  | 40 IL              | R.ENGI         | ואבבר         | MING       | DAI                    | 4 2H       |                   | DRWG       | AREA<br>CODE       | ENG SET<br>SECT NUM | MAL SH            | EET PRO    | DWG REV.                                |
|          |                                                   | BY         |                                                  | ECKED           |          |             |                    |                        |                           |                   |                                                  |            | PDC           | APPROV     | 'AL                            |              |                        | PTION : R  |                    | IONE ZI        | MDE           | V СП       |                        |            |                   |            | -                  |                     | -                 |            |                                         |
| <b> </b> |                                                   |            |                                                  |                 |          |             |                    | RAWING                 |                           |                   |                                                  |            |               |            |                                |              | DESCR                  | PTION : IT | v⊏ vi⊃             | NON/I          | NUE           | √ 2HI      |                        |            |                   | МО         | MIN                | 5 47                | 43 0              | 01 D C     | 3 A                                     |
| IN C     | ASE (                                             | OF DE      | VLATIO                                           | A ENC           | MARI     | CED U       | JP PR              | NT SH                  | IL BE                     | SEN               | T OT                                             | HE PR      | OJECT         | ENGI       | NEER                           |              | <u> </u>               |            |                    |                |               |            |                        |            |                   | $\perp$    |                    |                     |                   |            | لــــــــــــــــــــــــــــــــــــــ |
|          |                                                   |            |                                                  |                 |          |             |                    |                        |                           |                   |                                                  |            |               |            |                                |              | 4                      | <b>1</b>   |                    |                |               |            |                        |            |                   |            |                    |                     |                   |            |                                         |

|             |                                         | l I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                          |             | i          |              |               |                 | Data sheet<br>MISCELLANEOUS II         |                                                  |
|-------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------|------------|--------------|---------------|-----------------|----------------------------------------|--------------------------------------------------|
| Tag No.     | Service                                 | Miscellaneous instrument Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Requisition<br>Sub-gr    | Manı        | ufacturer  | Description  | Board         | Note            |                                        | Tag No.<br>48—                                   |
| 48-         |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Sub-gr<br>Ser. No<br>FP/ |             |            | Model Type   | Local         |                 |                                        | PEFS No. NIM-1                                   |
| HS-2219     | PUMP P-48357                            | PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | _                        |             | _          | <del>-</del> | L             | 1)              |                                        | HS-2219                                          |
|             | LOCAL START/STOP                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        | 2638-001-DQ                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        |                                                  |
| HS-2658     | PUMP P-48357                            | DECET DISCU DITTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |             | _          | ļ            |               | 1)              |                                        | HS-2658                                          |
| N3-2030     | LOCAL RESET                             | RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |             |            | -            | <u> </u>      | <del>  '/</del> |                                        | 2638-001-DQ                                      |
|             | EOOAL NEGET                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              | <b></b>       |                 | ************************************** | 2030-001-00                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        |                                                  |
| HS-2220     | PUMP P-48358                            | PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -                        |             |            |              | L             | 1)              |                                        | HS-2220                                          |
|             | LOCAL START/STOP                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        | 2638-001-DQ                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            | <b>_</b>     |               |                 |                                        |                                                  |
| HS-2660     | PUMP P-48358                            | RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |             |            | <u> </u>     | L             | 1)              |                                        | HS-2660                                          |
| 113-2000    | LOCAL RESET                             | RESCITOSTIBUTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                          |             |            |              | <del></del> - | 1               |                                        | 2638-001-DQ                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        | 2000 001 04                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        |                                                  |
| HS-2661     | PUMP P-48359                            | PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |             |            |              | <u> </u>      | 1)              |                                        | HS-2661                                          |
|             | LOCAL START/STOP                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               | 2)              |                                        | 2640-001-DQ                                      |
|             |                                         | and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s |                          |             |            |              |               |                 |                                        | <del></del>                                      |
| HS-2662     | PUMP P-48360                            | PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                          |             | _          | <del> </del> | 1             | 1)              |                                        | HS-2662                                          |
| 110 2002    | LOCAL START/STOP                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            | 1            | <u> </u>      | 2)              |                                        | 2640-001-DQ                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 |                                        |                                                  |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _                        |             |            |              | <u> </u>      |                 |                                        |                                                  |
| HS-2663     | PUMP P-48359                            | RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |             |            | <u> </u>     | <u> </u>      | 1)              |                                        | HS-2663                                          |
|             | LOCAL RESET                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            | <del></del>  |               | 2)              |                                        | 2640-001-DQ                                      |
|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          | <del></del> |            | <del> </del> | <u> </u>      |                 |                                        |                                                  |
| HS-2664     | PUMP P-48360                            | RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |             |            | <b>-</b>     | L             | 1)              |                                        | HS-2664                                          |
|             | LOCAL RESET                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               | 2)              |                                        | 2640-001-DQ                                      |
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|             | *************************************** |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            | <del></del>  | ļ             |                 |                                        | <u> </u>                                         |
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| -           |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <u> </u>                 |             | : .        | 1            |               |                 |                                        | <del>                                     </del> |
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|             | MENT NOT BY WPAI, HENCE VEND            | OR DETAILS NOT AVAILABLE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                          | AREA        | :NIMR      | )            |               |                 | SCALE:<br>0 1 2 3 4                    | CAD DRAWING                                      |
| Z) BY CHEMI | CAL SKID VENDOR.                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          | AREA        |            |              |               |                 |                                        |                                                  |
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| _           |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             |            |              |               |                 | Petroleum De                           | velopment Oman                                   |
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|             |                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                          |             | MISC       | ELLANEO      | 110 11        | NSTRUMENTS      |                                        |                                                  |
|             | REFERENCE DRAWNGS                       | ייים וואסומה אף החוקם עם ווועם החומם מו                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                          | DESCRIPTION | ; IVII 3 C | LLLANLU      | اا دن         | 10 INOMENTS     | NO NIM 5 4743                          | 010 DQ 3  A                                      |
| IN CASE     | OF DEVIATIONS MARKED C                  | IP PRINT SHALL BE SENT TO COASTAL DESIGN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | OFFICE                   |             |            |              |               |                 |                                        |                                                  |

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| Tag No.    | Service                                          | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Requisition No. | Supplier               | Model No./Type                  | Range or<br>Set point | Board or<br>Local or<br>Rack                     |                                       | Tag No.<br>48        |
| 48-        |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                        |                                 |                       |                                                  |                                       | PEFS No.  <br>NIM-1- |
| XZA-2342   | P-48357 FIRE DETECTION                           | HEAT DETECTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | RQ-5010         | -                      | _                               | 107°C                 |                                                  | 1)                                    | XZA-2342             |
|            |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                        |                                 |                       |                                                  |                                       | 2638-001-DQ          |
|            |                                                  | · · · · · · · · · · · · · · · · · · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |                        |                                 |                       |                                                  |                                       |                      |
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| XZA-2343   | P-48358 FIRE DETECTION                           | HEAT DETECTOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | RQ-5010         | _                      | _                               | 107°C                 |                                                  | 1)                                    | XZA-2343             |
| 7.2.1      |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                        |                                 | 1                     |                                                  |                                       | 2638-001-DQ          |
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| XA-4106    | P-48307/8 FIRE DEALARM                           | HOOTER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RQ-5011         | <u>-</u>               | _                               |                       | <del>                                     </del> | 1)                                    | XA-4106              |
| AA +100    | 1 10007/0 FIRE DEPENDING                         | TOOLEY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NG CON          |                        | 1                               |                       |                                                  |                                       | 2638-001-DQ          |
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|            |                                                  | AND DECORPORATION OF DEMOCRATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                 |                        |                                 |                       |                                                  |                                       | GAD DDARWIG          |
| 1) PROCURE | REMARKS AND,<br>MENT NOT BY WPAI, HENCE VENDOR D | OR DESCRIPTION OF REVISIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 | AREA : NIME            | }                               |                       |                                                  | SCALE: —<br>0 1 2 3 4                 | CAD DRAWING          |
| 1) TROCONC | HEAT TOT BY WAY, HEADE VERBOR OF                 | THE IVE AVIEW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                        | SLUDGE PIT                      |                       | No. 05                                           | تفتط عَمَان Petroleum De              | شكةتنمية             |
|            |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                 |                        |                                 |                       |                                                  |                                       | velopment Oman       |
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| -                                       | GENERAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                  |                                                         |                                                  | OPER                                             | ATING C                    | ONDITION                                         |                                       |                                                       |                                  |              | INSTRU                                           | MENTS      |                             |                                   |                            |                  |                                                  |                     |
| Tag No.                                 | Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Fluid                                            | Gas or<br>Vapour<br>M.W.<br>Liquid<br>spec.<br>grav. at | Visc.<br>at<br>working<br>temp.                  | temp.                                            | Normal<br>press.<br>KPa(g) | Flo                                              | ow<br>3/D                             | Components<br>e.g.<br>Orifice plate<br>Orifice Flange | Requisition<br>Sub-gr<br>Ser. No | Manufacturer | Description                                      | Range      | Primar<br>Line<br>Size<br>& | y Element Orifice Diameter and/or | Control<br>Actions<br>e.g. | Board<br>or      | Notes                                            | TAG No.<br>48-      |
| 48                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  | working<br>temp.                                        |                                                  |                                                  | Kru(g)                     | Normal                                           | Maximum                               | Transmitter                                           | FP/5085                          |              | model type                                       | m³/d       | Sch.                        | Material<br>MM                    | P.I.D.                     | Locui            |                                                  | PEFS No.            |
| FI-1414                                 | PUMPS COMMON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SLUDGE OIL                                       | 0.93-                                                   | 104-                                             | 25-                                              | 300-                       | 140                                              | 154                                   | TRANSMITTER                                           | RQ-5002                          |              |                                                  | 0-170 m³/d |                             |                                   |                            |                  | 1)                                               | FI-1414             |
|                                         | DISCHARGE FLOW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  | 1.0                                                     | 4860                                             | 50                                               | 3935                       |                                                  |                                       |                                                       |                                  |              |                                                  |            |                             |                                   |                            |                  |                                                  | 2638-001-DQ         |
|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ļ                                                | <u> </u>                                                | ļ                                                | <u> </u>                                         |                            |                                                  | ļ                                     |                                                       |                                  |              | ļ                                                |            |                             |                                   |                            |                  |                                                  |                     |
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| FI-1415                                 | OXYGEN SCAVENGER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SLUDGE OIL                                       | 0.93-                                                   | 104-                                             | 25                                               | 300-                       | 140                                              | 154                                   | TRANSMITTER                                           | RQ-5002                          |              |                                                  | _          |                             |                                   |                            | <del> </del>     | 1)                                               | FI-1415             |
|                                         | PUMPS COMMON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                  | 1.0                                                     | 4860                                             | 50                                               | 3935                       |                                                  |                                       |                                                       |                                  |              |                                                  |            |                             |                                   |                            |                  |                                                  | 2640-001-DQ         |
|                                         | DISCHARGE FLOW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                  |                                                         | ļ                                                | <u> </u>                                         |                            |                                                  |                                       |                                                       |                                  |              |                                                  |            |                             |                                   |                            |                  |                                                  |                     |
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| 1) PROCUREM                             | ENT NOT BY WPAI, HENCE VENDOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | DETAILS NO                                       | T AVAIL                                                 | ABLE.                                            |                                                  |                            |                                                  | · · · · · · · · · · · · · · · · · · · |                                                       |                                  |              |                                                  |            | J                           | SCALE :                           |                            |                  | L                                                | CAD DRAWING         |
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|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                  |                                                         |                                                  |                                                  | 44.7                       |                                                  |                                       |                                                       | DRWG.TYPE : IN                   | ISTR.ENGI    | NEERING D                                        | ATA SH     | IEET                        | <u> </u>                          | AREA EN                    |                  |                                                  | SHEET PROJ DWG REV. |
|                                         | FERENCE DRAWINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                  |                                                         |                                                  |                                                  |                            |                                                  |                                       |                                                       | DESCRIPTION :FI                  | LOW INSTF    | RUMENTS                                          |            |                             |                                   |                            |                  |                                                  | 350 DQ 3 A          |
| IN CASE                                 | OF DEVIATIONS MARKED UP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PRINT SH                                         | ALL BE                                                  | SENT                                             | TO C                                             | CASTA                      | L DESIG                                          | N OFFI                                | CE                                                    |                                  |              |                                                  |            |                             |                                   |                            |                  |                                                  |                     |

|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       | Data shed                               | t for<br>RUMENTS                      |          |                                         | Contr. Job                                       |             |                                                   | _P^                                              |                          |
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|                                                                                        |                                | GENERAL.  |                                                  | OPER                             | ATING CON       | DITIONS                                          | l                                                            |                                               |              |           |            |                    | INSTR |                                         |                                       |          |                                         | 1                                                |             |                                                   | Γ                                                |                          |
| Tag No.                                                                                | Service                        |           | Fluid                                            | Gas or<br>vapour<br>Liquid       | Normal<br>temp. | Normal<br>pressure                               | Components<br>e.g.<br>Tronsmitter<br>Rec. controller<br>etc. | Requisition<br>sub-group<br>serial<br>numbers | Manufactorer |           | D<br>Model | <b>escri</b> ption | Туре  | Range                                   | Ports                                 | ory demo |                                         | Vessel connections Size Florige ratin            | 0.0         | Board<br>or<br>Local<br>or<br>Rock                | Remarks                                          |                          |
| 48                                                                                     | •                              |           | ļ                                                | spec.grav<br>at working<br>temp. | 2               | ldPo(g)                                          | etc.                                                         | FP7009/                                       |              | - {       |            |                    | ',#"  |                                         | e.g. Body<br>Displacer<br>Torque tube | '        | Material                                | Thanks to a                                      | •           | Rock                                              |                                                  | PEFSNO.<br>NIM-1-        |
|                                                                                        | SLUDGE PIT A-4830              | 7 LEVEL   | SLUDGE OIL                                       | 913-                             | 25-             | ATM                                              | RADAR & LEVEL                                                | RQ-5004                                       | -            |           |            |                    |       | _                                       | -                                     | -        |                                         | 3"-150#                                          | -           | 1)                                                |                                                  | LIA-1447                 |
|                                                                                        |                                |           |                                                  | 1000                             | 50              |                                                  | TRANSMITTER                                                  |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  | 2638001-DQ               |
|                                                                                        |                                |           |                                                  |                                  | ļ               |                                                  | (NON CONTACT TYPE)                                           |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  | 4,,                      |
|                                                                                        |                                |           |                                                  |                                  | <u> </u>        |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | ļ                                                 |                                                  |                          |
| LIZA-1448                                                                              | SLUDGE PIT A-4830              | 7100      | SLUDGE OIL                                       | 913-                             | 25              | ATM                                              | DADAR & LEVEL                                                | 00 5004                                       |              |           |            |                    |       |                                         | -                                     |          |                                         | 78 450#                                          |             | 1)                                                |                                                  | LIZA-1448                |
| UZA-1440                                                                               | SLUDGE PIT A-4030              | / LEVEL   | SLODGE VIL                                       | 1000                             | 50              | AIM                                              | RADAR & LEVEL<br>TRANSMITTER                                 | KQ-5004                                       |              |           |            |                    | -     |                                         |                                       | -        |                                         | 3"-150#                                          | ╬           | 1)                                                | -                                                | 2638-001-DQ              |
|                                                                                        |                                |           |                                                  | 1000                             | 30              | <del> </del>                                     | (NON CONTACT TYPE)                                           | -                                             |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  | +           | -                                                 | <del> </del>                                     | 2000 001 00              |
|                                                                                        |                                |           | 1                                                |                                  | <u> </u>        |                                                  | (                                                            |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  | $\top$      | <b>†</b>                                          |                                                  |                          |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          | *******                                 |                                                  |             |                                                   |                                                  |                          |
| LJZA-1451                                                                              | SLUDGE PIT A-4830              | 8 LEVEL   | SLUDGE OIL                                       | 913-                             | 25-             | ATM                                              | RADAR & LEVEL                                                | RQ-5004                                       | -            |           |            |                    |       | -                                       | -                                     | -        | ****                                    | 3"-150#                                          |             | 1)                                                |                                                  | LIZA-1451                |
|                                                                                        |                                |           |                                                  | 1000                             | 50              |                                                  | TRANSMITTER                                                  |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  | _           |                                                   |                                                  | 2638-001-DQ              |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  | (NON CONTACT TYPE)                                           | ļ                                             |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | ļ                                                 | -                                                |                          |
|                                                                                        |                                |           |                                                  |                                  | <u> </u>        |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          | ****                                    | <del>                                     </del> |             | -                                                 | <del> </del>                                     |                          |
| LIA-1452                                                                               | SLUDGE PIT A-4830              | 8 LEVEL   | SLUDGE OIL                                       | 913                              | 25              | ATM                                              | RADAR & LEVEL                                                | RQ5004                                        | -            | _         |            |                    |       | -                                       | -                                     |          |                                         | 3"-150#                                          |             | 1)                                                | <del>                                     </del> | LIZA-1452                |
|                                                                                        |                                |           |                                                  | 1000                             |                 | 1                                                | TRANSMITTER                                                  | 114 3331                                      | -            | 1         |            |                    |       |                                         |                                       |          |                                         |                                                  |             | <u> </u>                                          | 1                                                | 2638-001-DQ              |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  | (NON CONTACT TYPE)                                           |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  |                          |
|                                                                                        |                                |           |                                                  |                                  | ļ               | <u> </u>                                         |                                                              | ļ                                             |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  |                          |
| 174 4450                                                                               | AVVOCAL COALCAIOCE             | DOCINO    | CHOC OIL                                         | 017                              | ne ne           | ATU                                              | DP LEVEL                                                     |                                               | _            | -         |            |                    |       |                                         |                                       |          |                                         |                                                  |             | 1                                                 |                                                  | 1174 4450                |
| LIZA-1450                                                                              | OXYGEN SCAVENGER<br>TANK LEVEL | DOSING    | SLUDGE OIL                                       | 913-                             | 25-<br>50       | MTA                                              | TRANSMITTER                                                  |                                               |              | -         |            |                    |       |                                         | -                                     |          |                                         | -                                                |             | 1)                                                | -                                                | LIZA-1450<br>2640-001-DQ |
|                                                                                        | IVIIII ITALI                   |           |                                                  | 1000                             | 1 30            | <del> </del>                                     | II/ANSMITTELY                                                |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  | +           | <del>  ''                                  </del> | <u> </u>                                         | 2010-001-00              |
|                                                                                        |                                |           |                                                  | +                                |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          | *************************************** |                                                  |             | 1                                                 | <u> </u>                                         |                          |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  |                          |
| LIA-1449                                                                               | OXYGEN SCAVENGER               | DOSING    | SLUDGE OIL                                       | 913-                             |                 | ATM                                              | DP LEVEL                                                     |                                               | _            |           |            |                    |       | -                                       | _                                     |          |                                         |                                                  |             | 1)                                                |                                                  | LJZA-1449                |
|                                                                                        | TANK LEVEL                     |           |                                                  | 1000                             | 50              | <b>_</b>                                         | TRANSMITTER                                                  |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | 2)                                                | ļ                                                | 2640-001-D0              |
|                                                                                        |                                |           |                                                  |                                  | -               | <del>                                     </del> |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          | *******                                 |                                                  |             | <del> </del>                                      | ـ                                                | <u> </u>                 |
|                                                                                        |                                |           | <del>                                     </del> |                                  |                 | <del> </del>                                     |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  | +           | <del> </del>                                      | ┼─-                                              |                          |
|                                                                                        |                                |           |                                                  | +-                               | <del> </del>    |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | 1                                                 | <del> </del>                                     |                          |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | <del>                                     </del>  | $\vdash$                                         |                          |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  |                          |
|                                                                                        |                                |           |                                                  |                                  | <u> </u>        | <b>_</b>                                         | ļ                                                            |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | -                                                 | <u> </u>                                         |                          |
|                                                                                        |                                |           |                                                  |                                  | -               | <del>                                     </del> |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         | 4                                                |             | <del> </del>                                      | <del> </del>                                     |                          |
| ******                                                                                 |                                |           |                                                  |                                  | <del> </del>    | <del> </del>                                     | ļ                                                            | -                                             |              |           |            | ···                |       |                                         |                                       |          |                                         |                                                  |             | ╄──                                               | <del> </del>                                     |                          |
|                                                                                        |                                |           |                                                  | _                                |                 | +                                                | <del> </del>                                                 |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             | +                                                 | 1—                                               |                          |
| lles.                                                                                  |                                | ·         | REMARI                                           | S AND                            | OR DI           | ESCRIP                                           | TION OF REVIS                                                | IONS                                          |              |           |            |                    |       | L                                       | <u></u> .                             |          |                                         | SCALE :                                          |             | <u> </u>                                          | CAD                                              | DRAWING                  |
| Use:<br>2 lines for I.G                                                                | ! <b>.</b>                     | 1) PROCUR | REMENT NOT BY                                    | WPAI, HE                         | NCE VE          | NDOR DE                                          | TAILS NOT AVAI                                               | LABLE.                                        |              | AREA      |            | NIMR               |       |                                         |                                       |          |                                         | 0 1                                              | 2           | 3 4<br>al                                         | 5                                                | 6 7                      |
| 2 lines for LG<br>3 lines for LG<br>4 lines for LG<br>5 lines for LG<br>6 lines for LG | CHRCLA                         | 2) BY CHE | MICAL SKID VENI                                  | DOR.                             |                 |                                                  |                                                              |                                               |              |           |            | NIME               | CI I  | UDGE PI                                 | т                                     |          | 05                                      | 490.                                             | عَمَا       | ته تمل                                            | , d                                              | شكةتن                    |
| 6 lines for UK                                                                         | CALIRCA                        |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              | SUB A     | REA :      | INIMIK             | SL    | UDGE PI                                 | l                                     |          | ю, 05                                   |                                                  |             |                                                   |                                                  | -                        |
|                                                                                        | }                              |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              | Done .    | TVDE"      | INST               | FΝ    | IGINEERII                               | IG DAT                                | A SH     | FFT                                     | <del></del>                                      | <del></del> |                                                   |                                                  | nent Oman                |
|                                                                                        | ł                              |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              | LITTERGE. | irre :     | ., 10 1.           | I V   | · • · · · · · · · · · · · · · · · · · · | TO DATE                               | , 511    | '                                       | DRWG AREA                                        | ENG<br>SECT | SERIAL<br>NUMBER                                  | SHEET                                            | PROJ DWG REV             |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              | DESCR     | PTION :    | <b>LEVE</b> I      | L IN  | ISTRUME                                 | NTS                                   |          |                                         |                                                  |             |                                                   |                                                  | DQ 3 A                   |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         | "   ' ' ' ' '                                    |             | ., +0                                             | -00                                              |                          |
|                                                                                        |                                |           |                                                  |                                  |                 |                                                  |                                                              |                                               |              |           |            |                    |       |                                         |                                       |          |                                         |                                                  |             |                                                   |                                                  |                          |

|                |                                             |                                         |                                                  |                                                  |                                                  | 1                   |                                                  |           |                                                      |                                               |                                         |                                                  | 1           |              | wheet for<br>RE GAUGES       |                                    |              | Deelgn be  | ook No.:<br>b No.:          |                                                  | P        |                |
|----------------|---------------------------------------------|-----------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------|--------------------------------------------------|-----------|------------------------------------------------------|-----------------------------------------------|-----------------------------------------|--------------------------------------------------|-------------|--------------|------------------------------|------------------------------------|--------------|------------|-----------------------------|--------------------------------------------------|----------|----------------|
|                |                                             | GENERAL                                 |                                                  | T                                                | OPER/                                            | ATING COA           |                                                  |           |                                                      |                                               |                                         |                                                  |             | RUMEN        |                              |                                    |              | 10014. 00  | <u> </u>                    |                                                  |          | 1              |
| Tag No.        | Service                                     |                                         | Fluid                                            | Gas ar<br>vapour<br>MW<br>Liquid                 | Normal<br>temp.                                  | Static pri<br>Kpa(i | esaure<br>o)                                     | Дъ<br>Кра | Components<br>e.g.<br>Transmitter<br>Rec. Controller | Requisition<br>sub-group<br>seriol<br>numbers | Manufacturer                            | Model                                            | Description | Туре         | Range<br>Kpa(g)<br>OF<br>kPa |                                    | nary element |            | Control<br>actions<br>P.I.D | Board<br>or<br>local<br>or                       | Remortos | Tog No.<br>48- |
| 48-            |                                             |                                         |                                                  | at work<br>temp.                                 | •                                                | Min.                | Norm.                                            | Max.      | etc.                                                 |                                               |                                         |                                                  |             | .,,,-        | ldPa                         | Type<br>protected<br>non-protected | Mat          | erlai      |                             | Aux room                                         |          | PEFS No.       |
| PG-1530        | PUMP P-48357                                |                                         | SLUDGE OIL                                       | 913-                                             | 25-                                              | 0                   | 3935                                             | 4500      | GUAGE                                                | <del> </del>                                  |                                         | +                                                |             |              | 0-6000                       | BOURDON                            | <b></b>      |            | -                           | $\vdash_{\overline{L}}$                          | 1)       | PG-1530        |
| 1000           | DISCHARGE PRE                               | SSURE                                   | 323332 312                                       | 1000                                             | 50                                               |                     |                                                  | 1000      | OUTION                                               | 1"                                            |                                         | <del>                                     </del> | **          |              | 0 0000                       | BOOKBOK                            | l            |            | <del> </del>                | <del>                                     </del> | ·/       | 2638-001       |
|                |                                             |                                         |                                                  |                                                  | <del>                                     </del> | 1                   | t                                                |           |                                                      | t                                             |                                         |                                                  | ****        |              |                              |                                    | ļ            |            |                             | ļ                                                |          | -DQ            |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          |                |
|                |                                             |                                         |                                                  |                                                  | ļ                                                |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          |                |
| PG-1531        | PUMP P-48358                                |                                         | SLUDGE OIL                                       | 913-                                             | 25-                                              | 0                   | 3935                                             | 4500      | GUAGE                                                | ļ                                             |                                         |                                                  |             |              | 0-6000                       | BOURDON                            |              |            |                             | <u> </u>                                         | 1)       | PG-1531        |
|                | DISCHARGE PRE                               | SSURE                                   |                                                  | 1000                                             | 50                                               | <b> </b>            | ļ                                                | ļ         |                                                      |                                               |                                         | +                                                |             |              |                              |                                    |              |            | <b>-</b>                    | ļ                                                |          | 2638-001       |
|                |                                             |                                         |                                                  | <del> </del>                                     | <del> </del>                                     | ├                   |                                                  |           |                                                      | -                                             | *************************************** | +                                                |             |              |                              |                                    |              |            |                             | <del> </del>                                     |          | -DQ            |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          |                |
| PG-1532        | COMMON DISCHA                               | ARGE                                    | SLUDGE OIL                                       | 913~                                             | 25-                                              | 0                   | 3935                                             | 4500      | GUAGE                                                |                                               |                                         |                                                  |             |              | 0-6000                       | BOURDON                            |              |            | <u> </u>                    | L_L                                              | 1)       | PG-1532        |
|                | LINE PRESSURE                               |                                         |                                                  | 1000                                             | 50                                               | ļ                   | ļ                                                |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    | <u> </u>     |            | <u> </u>                    | <b> </b>                                         |          | 2639-001       |
|                |                                             |                                         |                                                  | -                                                |                                                  | -                   | <del> </del>                                     |           |                                                      |                                               |                                         | _                                                |             |              |                              |                                    | <u> </u>     |            | -                           |                                                  |          | -DQ            |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     | <del>                                     </del> |           |                                                      |                                               |                                         |                                                  |             |              | 1                            | <u> </u>                           |              |            | 1                           |                                                  | ļ        |                |
| PG-1538        | A-48305 PIG L                               | AUNCHER                                 | SLUDGE OIL                                       | 913-                                             | 25                                               | 0                   | 0                                                | 4500      | GUAGE                                                |                                               |                                         |                                                  |             |              | 0-6000                       | BOURDON                            |              |            |                             | L                                                | 1)       | PG-1538        |
|                | PRESSURE                                    |                                         |                                                  | 1000                                             | 50                                               |                     | ļ                                                |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          | 2639-001       |
|                |                                             |                                         |                                                  | <del> </del>                                     | <del> </del>                                     | <del> </del>        | <b> </b>                                         |           |                                                      | -                                             |                                         |                                                  |             |              |                              |                                    | ļ            |            |                             | -                                                |          | -DQ            |
|                |                                             |                                         |                                                  | <del> </del>                                     |                                                  | -                   | <del> </del>                                     |           |                                                      |                                               | V /VIII.                                | +                                                |             |              |                              |                                    |              |            |                             | <del> </del>                                     | <u> </u> | <del> </del>   |
| PG-1539        | A-48305 PIG                                 |                                         | SLUDGE OIL                                       | 913-                                             |                                                  | 0                   | 0                                                | 4500      | GUAGE                                                |                                               |                                         |                                                  |             |              | 0-6000                       | BOURDON                            |              |            |                             | L                                                | 1)       | PG-1539        |
|                | LAUNCHER PRES                               | SS.                                     |                                                  | 1000                                             | 50                                               |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          | 2639-001       |
|                |                                             |                                         |                                                  | <u> </u>                                         | ļ                                                | <u> </u>            | <u> </u>                                         |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          | -DQ            |
|                |                                             |                                         |                                                  | <del></del>                                      | <del> </del>                                     | <b></b>             | <b></b>                                          | <b></b>   |                                                      | <b>-</b>                                      |                                         |                                                  |             |              |                              | <u> </u>                           | <del> </del> |            |                             | ļ                                                |          | ļ              |
| PG-1534        | OXYGEN SCAVE                                | NGER                                    | OXYGEN                                           | <del>                                     </del> |                                                  | <del> </del>        | <del> </del>                                     | <b> </b>  | GUAGE                                                | -                                             | <del></del>                             | _                                                |             |              |                              | BOURDON                            | <u> </u>     |            | <del></del>                 | +-                                               | 1) 2)    | PG-1534        |
| 10 1001        | PUMP P-48359                                |                                         | SCAVENGER                                        | <del> </del>                                     | ·   · · · · · · ·                                |                     | t                                                |           |                                                      | 1                                             |                                         |                                                  |             |              |                              | Bookbok                            | <del> </del> |            | +                           | ╫                                                | 17: 27   | 2640-001       |
|                | PRESSURE                                    |                                         |                                                  |                                                  |                                                  | <del></del>         | 1                                                | <b>†</b>  | <u> </u>                                             |                                               |                                         | 1                                                |             |              |                              |                                    |              |            | 1                           | 1                                                |          | -DQ            |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          |                |
| PG-1535        | OXYGEN SCAVE                                |                                         | OXYGEN                                           |                                                  |                                                  |                     |                                                  |           | GUAGE                                                |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             | L                                                | 1), 2)   | PG-1535        |
|                | PUMP P-48360                                | DISCH.                                  | SCAVENGER                                        |                                                  | .                                                | <u> </u>            | <b> </b>                                         | <u> </u>  |                                                      | ļ                                             |                                         |                                                  |             |              |                              | BOURDON                            | ļ            |            |                             | <u> </u>                                         | ļ        | 2640-001       |
|                | PRESSURE                                    |                                         |                                                  | ┼                                                | ļ                                                | ļ                   | <del> </del>                                     | ļ         |                                                      | ļ                                             |                                         |                                                  |             |              |                              |                                    | <u> </u>     |            |                             | —                                                | ļ        | -DQ            |
|                |                                             | *************************************** | <del>                                     </del> | <del> </del>                                     | <del>                                     </del> | <del> </del>        | ┼──                                              | <u> </u>  |                                                      | -                                             |                                         |                                                  |             |              |                              |                                    |              |            | -                           | <del> </del>                                     | -        |                |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          |                |
|                |                                             |                                         |                                                  | ļ                                                |                                                  |                     | <del> </del>                                     |           |                                                      |                                               |                                         |                                                  |             |              |                              |                                    | <u> </u>     |            |                             |                                                  |          |                |
| <del></del>    |                                             |                                         |                                                  |                                                  | <del> </del>                                     |                     | <del> </del>                                     | <u> </u>  |                                                      | <del> </del>                                  |                                         | -                                                |             |              |                              | <u> </u>                           | -            |            | +                           |                                                  |          |                |
| Use:           |                                             |                                         | REMARK                                           |                                                  |                                                  |                     |                                                  |           |                                                      |                                               |                                         |                                                  |             |              | I                            |                                    |              | SCALE : -  | - 2                         | 3                                                | CAI      | DRAWING        |
|                | and Pi - local<br>PR.PC<br>C.PRC.PA.Pdl.PdR |                                         | REMENT NOT BY W                                  |                                                  | NCE VE                                           | NDOR D              | ETAILS I                                         | VA TOP    | AILABLE.                                             |                                               | AREA : [                                | <u>IIMR</u>                                      |             |              |                              |                                    |              |            | 18:075                      | W2 12                                            | HISTORY  | Statement      |
| 5 lines for M  | APRAPAAPACPARC                              | 2) BY CHE                               | MICAL SKID VEND                                  | OR.                                              |                                                  |                     |                                                  |           |                                                      |                                               | - SUB AREA : 1                          | NIMR                                             | SLUDO       | Œ            | PIT                          |                                    | NO. 05       |            | نَمَان                      | نطغ                                              | سيةنا    | شركةتن         |
| 7 lines for Po | CAPRCAPAIAPARA<br>HCAPARGA                  |                                         | *****                                            |                                                  |                                                  |                     |                                                  |           |                                                      | ******                                        |                                         |                                                  |             |              |                              |                                    |              | <b>***</b> | _                           |                                                  |          | nent Oman      |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               | DRWG.TYPE :                             | NST.                                             | ENGIN       | EEF          | RING DA                      | ATA SHE                            | EET          | DRWG ARE   | A ENG                       | SERIAL<br>NUMBER                                 |          | PROJ DWG REV   |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               | DESCRIPTION :                           | DDEC                                             | CHDE 4      | <b>~ λ</b> 1 | ICEC                         |                                    | F            | cot        |                             |                                                  | ,        | ·              |
|                |                                             |                                         |                                                  |                                                  |                                                  |                     | _                                                |           |                                                      |                                               | DESCRIPTION :                           | - I/E2                                           | SUKE !      | GAL          | JUES                         |                                    |              | NO NI      | M 5                         | 4743                                             | 500      | DQ 3 0         |
|                |                                             | <u> </u>                                |                                                  |                                                  |                                                  |                     |                                                  |           |                                                      |                                               | !                                       |                                                  |             |              |                              |                                    |              |            |                             |                                                  |          |                |

|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              | 1                                                |                                                  | İ                                                |                                                  |                                                  | a sheet for                                      |                                                |
|-------------|----------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------|--------------------------------------------------|---------------|----------------|-------------------------------------------------------|----------------------------------|--------------|--------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|------------------------------------------------|
|             |                                                    |                                                  | 1                                                |                |                                                  |               |                | <del></del>                                           |                                  |              |              |                                                  |                                                  |                                                  | PRES                                             | SURE                                             | INSTRU                                           | <u>11 L2                                  </u> |
|             | GENERAL                                            |                                                  |                                                  | OPERA          | ATING C                                          | ONDITIONS     | 5              |                                                       |                                  | IN:          | STRUMENTS    |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  | Gas or<br>Vapour<br>M.W.                         |                | Static                                           | Press.        | ΔΡ             | 00                                                    |                                  |              |              | Range                                            | Primary                                          | Element                                          |                                                  |                                                  |                                                  | TAG No.                                        |
| Tag No.     | Service                                            | Fluid                                            | Liquid<br>spec.<br>grav. at                      | Norm.<br>temp. |                                                  | Pa(g)         |                | Components,<br>e.g.<br>Transmitter<br>Rec. Controller | Requi—<br>Requisition<br>Sub—gr. | Manufacturer | Description  | kPa(g)<br>or                                     | Туре                                             |                                                  | Control<br>Actions<br>e.g.                       |                                                  | Notes                                            | 48-<br>PEFS No.                                |
| 48          |                                                    |                                                  | working<br>temp.                                 | Ψ.             | Min.                                             | Norm.         | Max.           | Note Controlled                                       |                                  |              |              | ^                                                |                                                  | Material                                         | J. G. G.                                         | Locui                                            |                                                  | NIM-1-                                         |
| PIZA-1516   | PIPE LINE PRESS.                                   | SLUDGE OIL                                       | 0.93-                                            | 25-            | 0                                                | 3935          | 4500           | PRESS. TRANSMITTER                                    | RQ-5005                          | <b> </b>     |              | 0-6000                                           | dp CELL                                          | SOSS                                             |                                                  | L                                                | 1)                                               | PIZA-1516                                      |
|             |                                                    |                                                  | 10                                               | 50             |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  | 2638-001-DQ                                    |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
| 5171 4540   | 0.00001.001.001.001.001.00                         | 0)0/051                                          | ļ                                                |                | <u> </u>                                         | ļ             |                |                                                       |                                  |              |              | <del> </del>                                     | <del>                                     </del> | ļ                                                |                                                  | <del> </del>                                     | 4) 0)                                            | 0174 4540                                      |
| PIZA-1518   | OXYGEN SCAVENGEN PUMP<br>P-48359 DIAPHRAGM FAILURE | OXYGEN                                           | <del>  -</del>                                   | <del>  -</del> | <del>  -</del> -                                 | <del> </del>  | <b>  -</b>     | <u> </u>                                              | <del></del>                      |              | <del> </del> |                                                  | <del> </del>                                     | +                                                | <del> </del>                                     |                                                  | 1), 2)                                           | PIZA-1518<br>2638-001-DQ                       |
|             | F-40339 DIAFRICAGM FAILURE                         | JUNILITOLI                                       | <del> </del>                                     | +-             | <del> </del>                                     | <del></del>   | <del> </del>   |                                                       |                                  |              |              | <del>                                     </del> |                                                  | <del> </del>                                     | +                                                | <del>                                     </del> |                                                  | 2000 001 00                                    |
| ,           |                                                    |                                                  |                                                  | 1              |                                                  |               |                |                                                       |                                  |              |              | <u> </u>                                         |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  | <u> </u>                                         | <u> </u>       |                                                  | <b> </b>      | <u> </u>       | <u> </u>                                              |                                  | <u> </u>     | <del> </del> | <u> </u>                                         | ļ                                                | 4                                                | <u> </u>                                         |                                                  |                                                  |                                                |
| PIZA-1519   | OXYGEN SCAVENGER PUMP                              | OXYGEN                                           | <del> </del>                                     | <del>↓</del> - | -                                                | ļ             | -              |                                                       | _                                |              |              |                                                  | <u> </u>                                         |                                                  | <del> </del>                                     | <del> </del>                                     | 1), 2)                                           | PIZA-1519                                      |
|             | P-48360 DIAPHRAGM FAILURE                          | SCAVENGER                                        | <del>                                     </del> |                | <del> </del>                                     | <del>  </del> | -              |                                                       |                                  |              |              | <del> </del>                                     |                                                  |                                                  |                                                  | -                                                |                                                  | 2640-001-DQ                                    |
|             |                                                    |                                                  |                                                  | +              | ļ                                                |               |                |                                                       |                                  |              |              |                                                  |                                                  | <del> </del>                                     |                                                  | <del>                                     </del> |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  | l             | 1              |                                                       |                                  |              | <u> </u>     |                                                  |                                                  | 1                                                | 1                                                | <b>†</b>                                         |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
| PI-1522     | OXYGEN SCAVENGER PUMP                              | OXYGEN                                           | <del>  -</del>                                   | <u> </u>       | <u> </u>                                         |               | <del>  -</del> | <u> </u>                                              | <u> </u>                         | <u> </u>     | ļ            | <u> </u>                                         |                                                  |                                                  | ļ                                                | <u> </u>                                         | 1), 2)                                           | PIZA-1522                                      |
|             | COMMON DUCH, PRESS.                                | SCAVENGER                                        |                                                  | ₩-             | <del> </del>                                     | <b> </b>      | -              |                                                       |                                  | <del> </del> |              |                                                  | <del> </del>                                     |                                                  | <del> </del>                                     | -                                                |                                                  | 2640-001-DQ                                    |
|             |                                                    | <u> </u>                                         |                                                  | +-             | -                                                | <b> </b>      | <u> </u>       |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  | $\vdash$                                         |                                                  | <del> </del>                                   |
|             |                                                    |                                                  |                                                  | 1              | <del>                                     </del> | <del> </del>  |                |                                                       |                                  |              |              |                                                  | 1                                                |                                                  | <del>                                     </del> | <del>                                     </del> |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    | <u> </u>                                         | <del> </del>                                     | -              | <del> </del>                                     | ļ             | ļ              | <u> </u>                                              | <b> </b>                         | <u> </u>     |              |                                                  | <u> </u>                                         |                                                  | -                                                | -                                                |                                                  | <b></b>                                        |
|             |                                                    |                                                  | <del>-</del>                                     | +              | ┼                                                | <b></b>       | ļ              |                                                       |                                  |              | <b></b>      |                                                  | <del> </del>                                     | <del></del>                                      | <del> </del>                                     | ļ                                                | <del> </del>                                     | <del> </del>                                   |
|             |                                                    | <del>                                     </del> | <del> </del>                                     | +              | <del>                                     </del> | <del> </del>  | <del> </del>   | <del> </del>                                          |                                  | <del> </del> | <b>-</b>     | <del> </del>                                     |                                                  | <del>                                     </del> | +                                                |                                                  | <del>                                     </del> | <del> </del>                                   |
|             |                                                    |                                                  |                                                  | <del> </del>   | 1                                                |               | †              |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  | -                                                |                |                                                  |               |                | ļ                                                     |                                  |              |              |                                                  |                                                  |                                                  | ļ                                                |                                                  |                                                  |                                                |
|             |                                                    | <del> </del>                                     | -                                                | ┼              | <del> </del>                                     | <del> </del>  | <del> </del>   | <del> </del>                                          |                                  | <del> </del> | -            |                                                  | 1                                                | -                                                | +                                                | -                                                |                                                  | <del> </del>                                   |
|             |                                                    | <del> </del>                                     | <del> </del>                                     | +-             | <b>-</b>                                         | <del> </del>  | +              |                                                       | <b>†</b>                         | <u> </u>     |              |                                                  | <del> </del>                                     |                                                  | +                                                | <del> </del>                                     | <del> </del>                                     | <del> </del>                                   |
| <u> </u>    |                                                    | <del>                                     </del> | T                                                | T              | <b>†</b>                                         | t             | ļ              | <del> </del>                                          |                                  |              | 1            | <u> </u>                                         | <u> </u>                                         |                                                  |                                                  |                                                  |                                                  |                                                |
|             | MENT NOT BY WPAI, HENCE VENDOR                     | R DETAILS N                                      | OT AVAIL                                         | ABLE.          |                                                  |               |                |                                                       |                                  | NII 15       |              |                                                  |                                                  |                                                  | SCALE:                                           |                                                  | 7 4                                              | CAD DRAWING                                    |
| 2) BY CHEMI | CAL SKID VENDOR                                    |                                                  |                                                  |                |                                                  |               |                |                                                       | AREA                             | :NIMR        |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       | SUB ARE                          | .NIMR S      | SLUDGE PIT   | _                                                |                                                  | to. 05                                           |                                                  | -                                                | نَفْطُعُهَ                                       | -                                              |
|             |                                                    |                                                  |                                                  |                |                                                  |               |                |                                                       | DRWG.TYF                         | € :INSTR.    | ENGINEER     | ING DA                                           | TA SHE                                           | ET                                               | NEWC ARE                                         | A ENG                                            | 7                                                | SHEET PROJ DWG RE                              |
| NOTES/R     | REFERENCE DRAWNGS                                  |                                                  |                                                  |                |                                                  |               | .,             |                                                       | DESCRIPT                         | ION :PRESS   | URE INST     | RUMEN                                            | ΓS                                               | -                                                | NO NI                                            |                                                  | -1                                               | 550 DQ 3 A                                     |
| IN CASE     | OF DEVLATIONS MARKED UP                            | PRINT SI                                         | HALL BI                                          | e sen          | T TO                                             | COAST.        | AL DES         | SIGN OFFICE                                           |                                  |              |              |                                                  |                                                  |                                                  |                                                  |                                                  |                                                  |                                                |

|                                                                          |                                                                                                    |           |                                          |                                                               |                 | Í                 | -                                                |              |                                |                                               |              |          | )            | Data  | sheet for INSTRUMENT               | 5                                  |              | Design box<br>Contr. Job |                             | PAIP0023                                         |                      |                   | _        |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------|------------------------------------------|---------------------------------------------------------------|-----------------|-------------------|--------------------------------------------------|--------------|--------------------------------|-----------------------------------------------|--------------|----------|--------------|-------|------------------------------------|------------------------------------|--------------|--------------------------|-----------------------------|--------------------------------------------------|----------------------|-------------------|----------|
|                                                                          |                                                                                                    | GENERAL.  |                                          |                                                               | OPER/           | ATING CON.        | . , <del>-</del>                                 |              | 1                              |                                               |              |          | _            | RUMEN |                                    |                                    |              | 100.00                   |                             |                                                  | <u> </u>             |                   | -        |
| Tag No.<br>48–                                                           | Service                                                                                            |           | Fluid                                    | Gas or<br>vapour<br>MW<br>Liquid<br>sp. gr./dessin<br>at work | Normal<br>temp. | Static pr<br>Kpa( | ecaure<br>a)                                     | ∆e<br>Kpa    | Tronsmitter<br>Rec. Controller | Requisition<br>aub-group<br>serial<br>numbers | Manufacturer | Mode     | Description  | Туре  | Range<br>Kpa(g)<br>or<br>∠P<br>kPa |                                    | nary element |                          | Control<br>actions<br>P.I.D | or                                               | Remarks              | Tag No.<br>48—    |          |
|                                                                          | į                                                                                                  |           |                                          | at work<br>temp.                                              |                 | Min.              | Norm.                                            | Max          | . stc.                         |                                               |              | BOOK .   | •            | ()po  | k₽a                                | Type<br>protected<br>non-protected | Mat          | eriol                    |                             | Aux room                                         | ļ                    | PEFSNO.<br>NIM-1- |          |
| PDIA-1520                                                                | DP-ACROSS FILT                                                                                     | ER        | SLUDGE OIL                               | 0.93-                                                         | 25-             | 0                 | 10                                               | 100          | AP TRANSMITTER                 | RQ                                            |              |          |              |       | 0-200                              | dp CELL                            | SD           | SS                       |                             | L                                                | 1)                   | PDIA-1520         | ō        |
|                                                                          | S-48362                                                                                            |           | -10-11-11-11-11-11-11-11-11-11-11-11-11- | 10                                                            | 50              |                   |                                                  |              |                                | 5005                                          |              |          |              |       |                                    |                                    |              |                          |                             | i                                                |                      | 2638-001          |          |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      | DC                |          |
|                                                                          |                                                                                                    |           |                                          | <b></b>                                                       |                 |                   | ļ                                                | ļ            |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             | <u> </u>                                         |                      |                   | _        |
| PDIA-1521                                                                | DP-ACROSS FILT                                                                                     | ER        | SLUDGE OIL                               | 0.93-                                                         |                 | 0                 | 10                                               | 100          | △P TRANSMITTER                 |                                               | ····         |          |              |       | 0-200                              | dp CELL                            | SC           | SS                       |                             | L                                                | 1)                   | PDIA-152          |          |
|                                                                          | S-48363                                                                                            |           |                                          | <del> </del>                                                  | 50              | <u> </u>          | ļ                                                | <del> </del> |                                | 5005                                          |              |          |              |       |                                    |                                    | ļ            |                          |                             | <b>  </b>                                        |                      | 2638-001          |          |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  | ļ               |                   | <del> </del>                                     | <del></del>  |                                |                                               |              |          |              |       |                                    |                                    | <del> </del> |                          |                             | $\vdash \vdash$                                  |                      | -DC               | <u>!</u> |
|                                                                          |                                                                                                    |           |                                          | <del>                                     </del>              |                 | <b>-</b>          | -                                                | <u> </u>     |                                | <del> </del>                                  | :            |          |              |       |                                    |                                    | <del> </del> |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           | ***************************************  |                                                               |                 |                   | † ·                                              | <u> </u>     |                                |                                               |              |          |              |       |                                    |                                    | 1            |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   | ļ                                                |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           | ,                                        |                                                               |                 |                   | ļ                                                | ļ            |                                |                                               |              | _        |              |       |                                    |                                    |              |                          |                             | <b> </b>                                         |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <b>-</b>                                                      |                 |                   | ļ                                                | <u> </u>     | ļ                              |                                               |              |          |              |       |                                    |                                    |              |                          |                             | <b></b> '                                        |                      |                   |          |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  |                 |                   |                                                  | <del> </del> |                                |                                               |              |          |              |       |                                    | <u> </u>                           | <del> </del> |                          |                             | ļ                                                |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          |                                                               | <del> </del>    | <del> </del>      | <del> </del>                                     | <del> </del> | <del> </del>                   |                                               | <del> </del> |          | <del></del>  |       |                                    |                                    | <del> </del> |                          |                             | H                                                |                      |                   | -        |
|                                                                          |                                                                                                    | ****      |                                          |                                                               |                 |                   | †                                                |              | 1                              | <b> </b>                                      |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               |              | <u> </u> |              |       |                                    | <u> </u>                           | Ì            |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           | <del></del>                              | ļ                                                             | ļ               | <u> </u>          | <u> </u>                                         | ļ            | ļ                              |                                               |              |          |              |       |                                    | ļ                                  | ļ            |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  | <u> </u>        | -                 | <del> </del>                                     | ļ            | ļ                              |                                               |              |          |              |       |                                    |                                    | ļ            |                          |                             |                                                  | <b> </b>             |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  |                 |                   | <del> </del>                                     | <del> </del> | <del> </del>                   |                                               |              |          | <del>.</del> |       |                                    | <u> </u>                           | <u> </u>     |                          |                             |                                                  | $\vdash\vdash\vdash$ |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  | ·               |                   | <del>                                     </del> | <del> </del> | <del> </del>                   | <del> </del>                                  |              |          |              |       |                                    |                                    | <del> </del> |                          |                             |                                                  | $\vdash\vdash\vdash$ |                   | -        |
| -                                                                        |                                                                                                    |           |                                          | <del>1</del>                                                  | 1               | t                 | †                                                | <del> </del> |                                | i                                             |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          | 1                                                             |                 | 1                 | i —                                              | i            |                                |                                               |              |          |              | ***** |                                    |                                    |              |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <b> </b>                                                      | ļ               | ļ                 |                                                  |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  | ļ               | ļ                 | <u> </u>                                         | <u> </u>     | ļ                              | ļ                                             |              |          |              |       | ·                                  | <u> </u>                           |              |                          |                             | ļ                                                |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  | ļ               | <del> </del>      | <del> </del>                                     |              | <u> </u>                       |                                               |              |          |              |       |                                    |                                    | <del> </del> |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  | <u> </u>        | ļ                 | <u> </u>                                         | <u> </u>     | <del> </del>                   | <del> </del>                                  | <del></del>  |          |              |       | <u> </u>                           | <del> </del>                       |              |                          |                             | <del>                                     </del> |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          | <b>†</b>                                                      | <u> </u>        | -                 |                                                  | <u> </u>     |                                | <b></b>                                       |              |          |              |       |                                    |                                    | <del> </del> | **                       |                             | <del> </del>                                     |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          | 1                                                             | 1               |                   | 1                                                |              |                                | 1                                             |              |          |              |       |                                    |                                    | <b>†</b>     |                          |                             |                                                  |                      |                   | -        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           |                                          | <del> </del>                                                  |                 | <u> </u>          | <u> </u>                                         | ļ            |                                |                                               |              |          |              |       |                                    |                                    |              |                          |                             |                                                  |                      |                   | _        |
|                                                                          |                                                                                                    |           | DEMARK                                   | ]                                                             | /OD DE          | CODID             | 1                                                | <u> </u>     |                                |                                               |              |          |              | ·     |                                    | <u> </u>                           | <u> </u>     |                          |                             | <u> </u>                                         | ليبا                 |                   | =        |
| Use:<br>2 lines for P<br>3 lines for PU                                  | and PI — local<br>PR.PC                                                                            | 1) PROCUR | REMARKS<br>EMENT NOT BY W                | VPAI, HE                                                      | NCE VE          | NDOR D            | ETAILS                                           | NOT AV       | SIONS<br>AILABLE.              |                                               | AREA         | :NIMR    |              |       |                                    |                                    |              | SCALE: —<br>0 1          | 2                           | 3 4                                              |                      | DRAWING           | ı        |
| 4 lines for PIC<br>5 lines for PIC<br>6 lines for PIC<br>7 lines for PIC | and PI — local<br>PR.PC<br>C.PR.C.PA.Pd.PdR<br>A.PRA.PdA.PdC.PdRC<br>CA.PRCA.PdA.PdRA<br>ICA.PdRCA |           |                                          |                                                               |                 |                   |                                                  | <del></del>  |                                |                                               | SUB AREA     | PROI:    | DUCTIO       | N S   | TATION                             |                                    | но. 05       |                          | _                           |                                                  |                      | شكةت              |          |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               | DRWG.TYPE    | ,INST    | . ENGI       | NEEF  | RING DA                            | ATA SHE                            | EET          | DRWG AREA                | $\overline{}$               | SERIAL<br>NUMBER                                 |                      | PROJ DWG RE       | •        |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   |                                                  |              |                                |                                               | DESCRIPTION  | .PRES    | SSURE        | INS   | TRUMEN                             | ITS                                | F            |                          | _,                          |                                                  | ,                    | DQ 3 A            |          |
|                                                                          |                                                                                                    |           |                                          |                                                               |                 |                   | <del></del>                                      |              | <del></del>                    |                                               |              |          |              |       |                                    |                                    |              |                          | '                           |                                                  | '                    |                   | _        |

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| Thi-1448   PUMPS P-4337/6 COMMIN   SLIDE (M. 5   5   60   33.53   RANSWITER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                        | Service                               |           | Fluid          |              | Temperatu    | TO                                     | Hormel<br>pressure | Components<br>e.g.<br>Tronsmitter<br>Rec. Controller | Requisition<br>sub-group<br>serial               | Supplier     |           |            | Range                                            | Туре               | Inside                                           | Ι                                                | -                    | Control<br>actions<br>P.I.D | or<br>local<br>or | Remarks                                          | 48-                                              |
| Third   Pulling Price   State   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Color   Colo   | ı                      |                                       |           |                | Min.         | Norm.        | Masc.                                  | idPa(g)            | etc.                                                 | FP 3609/                                         |              |           |            | 2                                                | Length             | mm                                               | Materia                                          | '                    |                             | Neat              |                                                  |                                                  |
| 9SSN TIMETRATISE 335 PANSATER 235-00-10-10-10-10-10-10-10-10-10-10-10-10-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TIA-1468               | PUMPS P-48357/                        | 8 COMMON  | SLUDGE OIL     | 5            | 25           | 60                                     | 300-               | TEMPRATURE                                           | RQ-5008                                          |              |           |            | 0-100°C                                          | L                  | 1                                                |                                                  |                      |                             | L                 | 1)                                               |                                                  |
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| SUB AREA : NIMR SLUDGE PIT  NO. 05  SUB AREA : NIMR SLUDGE PIT  NO. 05  DRING.TYPE : INST. ENGINEERING DATA SHEET  DRING SET NIMBER SHEET DRING SETAL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEET PROJ DWG RETAIL SHEE | Use:<br>2 lines for TV | (ippol) IT,y                          | 1) PROCUR | EMENT NOT BY W | WPAI, HE     | NCE VE       | NDOR D                                 | ETAILS !           | NOT AVAILABLE                                        | <del> </del>                                     | ARE          | EA        | :NIMR      |                                                  |                    |                                                  |                                                  |                      |                             | 3                 | 4 5                                              | 6 7                                              |
| 7 lines for TICATICA (3 + n)lines for multipoint TI and TR  Petroleum Development Oman  DRWG.TYPE : INST. ENGINEERING DATA SHEET  DRWG AREA ENG SERIAL SHEET PROJ DWG REV CODE SECT NUMBER SHEET CODE SIZE  NUMBER SHEET PROJ DWG REV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                                       |           |                |              |              |                                        |                    |                                                      |                                                  |              |           |            | וממר מי                                          | т                  |                                                  | T                                                | مار الام<br>مار الام |                             | 1                 | 25.3                                             | ·+75 A                                           |
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| TELADED A TILDE IN CODE SECT NUMBER STEEL CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | (3 + n)linea i         | for multipoint 11 and TR              |           |                |              | <del></del>  |                                        |                    |                                                      |                                                  |              | WA T-C-   | INST FNO   | GINEERII                                         | AC DA              | 2 ATA                                            | HEET                                             |                      |                             | T                 |                                                  |                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                                       |           |                |              |              |                                        |                    | ***************************************              |                                                  | DRV          | WG, ITPE  | ;          |                                                  | 10 07              | 3                                                | ''                                               | DRWG A               | REA ENG                     | SERIAL<br>NUMBE   | SHEET                                            | PROJ DWG REV                                     |
| W   WW 3 4743023DQ 3   A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                                       |           |                | -            |              | ······································ |                    | :                                                    |                                                  | DES          | SCRIPTION | , TEMPERA  | TURE IN                                          | <b>ISTRU</b>       | MENT:                                            | s [                                              |                      |                             |                   | •                                                |                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        |                                       |           |                |              |              |                                        |                    |                                                      |                                                  |              |           |            |                                                  |                    |                                                  |                                                  |                      | .,,,,                       |                   |                                                  | 24/2/                                            |

## INSTRUMENT NAMEPLATES

## WASTE MANAGEMENT COMPLE

NIMR SLUDGE PIT

#### **NOTES:**

1) THE NAME PLATES TO BE SUPPLIED BY CONTRACTOR AS PER DETAILS PROVIDED & TO BE INSTALLED AT SITE.

> APPROVED FOR CONSTRUCTION

| Α   | MAR.'11 | KK    | Hall   | 25     | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    |           |
|-----|---------|-------|--------|--------|---------------------------|-----------|------------|-----------|
| 0   | DEC.'10 | Mrp   | PT     | ΚĎΑ    | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    | IH        |
| REV | DATE    | DRAWN | TEAML. | J.ENG. | DESCRIPTION               | D.I. 110  | PROJ. ENG. | SIGNATURE |
|     | DAIL    | BY    | CHE    | CKED   | DESCRIPTION               | B.I. NO   | PDOA       | PPROVAL   |

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

: NIMR AREA .NIMR SLUDGE PIT NO. 05

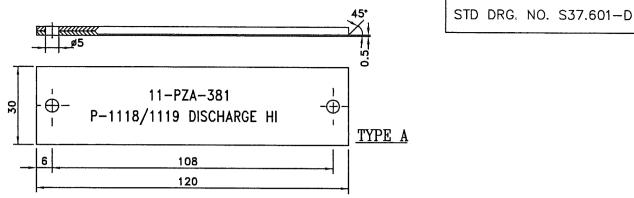
INSTRUMENT NAME PLATES

DESCRIPTION : COVER SHEET

Petroleum Development Oman SHEET PROJ DWG CODE SIZE SERIAL NUMBER NIM 5 4739 001DQ|4

| DESCRIPTION                 | SHEET | REV. 0  | REV. A  | REV. B | REV. C | REV. D | REV. E |
|-----------------------------|-------|---------|---------|--------|--------|--------|--------|
| COVER SHEET                 | 001   | DEC.'10 | MAR.'11 |        |        |        |        |
| REVISION/INDEX SHEET        | 002   | DEC.'10 | MAR.'11 |        |        |        |        |
| TYPES OF NAMEPLATES         | 003   | DEC.'10 | MAR.'11 |        |        |        |        |
| ENGRAVING SCHEDULE (TYPE-A) | 004   | DEC.'10 | MAR.'11 |        |        |        |        |
| ENGRAVING SCHEDULE (TYPE-A) | 005   | DEC.'10 | MAR.'11 |        |        |        |        |
| ENGRAVING SCHEDULE (TYPE-A) | 006   | DEC.'10 | MAR.'11 |        |        |        |        |
| ENGRAVING SCHEDULE (TYPE-A) | 007   | DEC.'10 | MAR.'11 |        |        |        |        |
| SPARE                       | 800   |         |         |        |        |        |        |
| ENGRAVING SCHEDULE (TYPE-B) | 009   | DEC.'10 | MAR.'11 |        |        |        |        |
|                             |       |         |         |        |        |        |        |
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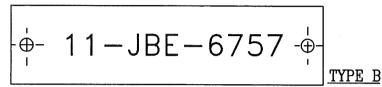
| AREA        | : NIMR                 |     |    | SCALE<br>0 | 1            | 2                    | 3             | CAD | DR           | AWI<br>6 | NG<br>7 |
|-------------|------------------------|-----|----|------------|--------------|----------------------|---------------|-----|--------------|----------|---------|
| SUB AREA    | :NIMR SLUDGE PIT       | NO. | 05 |            |              | مَان                 | فنطغ          | مية | نتظ          | 5        | ä       |
| DRWG.TYPE   | INSTRUMENT NAME PLATES |     |    | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER | T   | PROJ<br>CODE | DWG      |         |
| DESCRIPTION | :REVISION/INDEX SHEET  |     |    | NO         | NIM          | 5                    | 4739          | 002 | DQ           | 4        | А       |



Engraving: Maximum 2 lines-25 characters per line letter height 5 mm.

First line to specify instrument tag number only.

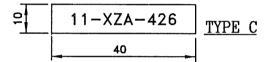
Material: Laminated Plastic, approx. 3mm thick.



Engraving: Tag number only - 13 characters - letter height 10 mm.

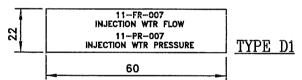
Material : Laminated Plastic, approx. 3mm thick.

NOTE : Dimensions identical to type A



Engraving: Tag number only - 15 characters - letter height 3 mm.

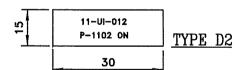
Material: Laminated Plastic, approx. 2mm thick.



Engraving: Maximum 4 lines 22 characters per line letter height 3 mm.

First line to specify instrument tag number only.

Material: Laminated Plastic, approx. 2mm thick.



Engraving: Maximum 2 lines 10 characters per line letter height 3 mm.

First line to specify instrument tag number only.

Material : Laminated Plastic, approx. 2mm thick.

| AREA        | , NIMR                 |        | SCALE<br>0 | 1            | 2                    | 3 4              | CAI<br>5 | DR   | AWI | NG<br>7 |
|-------------|------------------------|--------|------------|--------------|----------------------|------------------|----------|------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT        | NO. 05 |            |              | تَمان                | فتطغ             | مية      | نتت  | 5   | ÷       |
| DRWG.TYPE   | INSTRUMENT NAME PLATES |        | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER | T        | PROJ | DWG | REV.    |
| DESCRIPTION | TYPES OF NAMEPLATES    |        | NO         | NIM          | 5                    | 4739             | 003      | DQ   | 4   | Α       |

| ssue        | Qty |          |   |               |   |          |          |   |        | Tex    | t o      | n r    | am     | epl    | ate |        |   |        |          | 1 | . 1 |   |          |   |   |    |     | ype<br>Colou |         | Notes                                   |
|-------------|-----|----------|---|---------------|---|----------|----------|---|--------|--------|----------|--------|--------|--------|-----|--------|---|--------|----------|---|-----|---|----------|---|---|----|-----|--------------|---------|-----------------------------------------|
| ' <u>'8</u> |     | 1        |   |               |   | 5        |          |   |        |        | 10       |        |        |        |     | 15     |   |        |          |   | 20  |   |          |   |   | 25 |     | Note         |         | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| 0           | 1   |          |   |               |   |          |          |   | 4      | 8      | _        | L      | ı      | Α      | _   | 1      | 4 | 4      | 7        |   |     |   |          |   |   |    | 147 |              |         | NOTE 4                                  |
| Ľ           | '   | S        | L | U             | D | G        | Ε        |   | Р      | _      | Т        |        | Α      | _      | 4   | 8      | 3 | 0      | 7        |   | L   | Ε | ٧        | Ε | L |    | W   | В            | W       | NOTE-1                                  |
| 0           | 1   |          |   |               |   |          |          | 4 | 8      | _      | L        | 1      | Z      | Α      | _   | 1      | 4 | 4      | 8        |   |     |   |          |   |   |    | R   | В            | R       | NOTE-3                                  |
|             |     | S        | L | U             | D | G        | Ε        |   | Р      | 1      | T        |        | Α      | _      | 4   | 8      | 3 | 0      | 7        |   | L   | E | ٧        | E | L |    | K   | В            | Λ.      | NOIL-5                                  |
| 0           | 1   |          |   |               | _ |          |          | 4 | 8      | _      | L        |        | Z      | Α      | _   | 1      | 4 | 5      | 1        |   |     |   |          |   |   |    | R   | В            | R       | NOTE-3                                  |
| _           |     | S        | L | U             | D | G        | Ε        |   | Р      | 1      | T        |        | Α      | _      | 4   | 8      | 3 | 0      | 8        |   | L   | Ε | ٧        | Ε | L |    |     |              |         | 1,012 0                                 |
| 0           | 1   | s        | L | U             | D | G        | E        |   | 4<br>P | 8      | <u>-</u> | L      | I<br>A | A<br>— | 4   | 1<br>8 | 4 | 5      | 2        |   | L   | E | ٧        | Ε | L | -  | W   | В            | W       | NOTE-1                                  |
|             | _   |          |   |               |   |          |          |   | 4      | 8      | _        | T      | 1      | Α      | _   | 1      | 4 | 6      | 8        |   |     |   | _        |   |   |    |     |              |         |                                         |
| 0           | 1   |          | Р | υ             | М | Р        | s        |   | С      | 0      | М        | М      | 0      | N      |     | D      | 1 | S      | С        |   | Т   | Ε | М        | Р | • |    | W   | В            | W       | NOTE-1                                  |
| 0           | 1   |          |   |               |   |          |          | 4 | 8      | -      | Р        | ı      | Z      | Α      | _   | 1      | 5 | 1      | 6        |   |     |   |          |   |   |    | _   | _            | _       | NOTE 7                                  |
| L           | 1   | Р        | υ | М             | Р | S        |          | С | 0      | М      | М        | 0      | N      |        | D   | 1      | S | С      | Ή        | • | Р   | R | ы        | s | S | •  | R   | В            | R       | NOTE-3                                  |
| l<br>つ      | 1   |          |   |               |   |          |          |   | 4      | 8      | _        | F      | 1      | _      | 1   | 4      | 1 | 4      |          |   |     |   |          |   |   |    | w   | В            | W       | NOTE-1                                  |
| ,<br>⊢      | '   |          | Р | U             | М | Р        | s        |   | С      | 0      | М        | М      | 0      | N      |     | D      | - | S      | С        | ٠ | F   | L | 0        | W |   |    | **  |              | **      | NOIL-I                                  |
| 0           | 1   |          |   |               |   |          |          | 4 | 8      | _      | Р        | D      | Ì      | Α      | _   | 1      | 5 | 2      | 0        |   |     |   |          |   |   |    | w   | В            | w       | NOTE-1                                  |
| _           |     | D        | Р | ļ             | Α | С        | R        | 0 | S      | S      |          | F      | 1      | L      | T   | E      | R |        | S        |   | 4   | 8 | 3        | 6 | 2 |    |     |              | "       | 1,0,2                                   |
| 0           | 1   | _        | _ |               | _ | Ļ        | <u> </u> | 4 | 8      | _      | P        | D      | 1      | Α.     | _   | 1      | 5 | 2      | 1        |   |     | _ |          | _ |   |    | w   | В            | w       | NOTE-1                                  |
| -           |     | D        | Р |               | A | С        | R        | 0 | S      | S      |          | F      | <br> - | L      | T   | E      | R | _      | S        | _ | 4   | 8 | 3        | 6 | 3 |    |     |              |         |                                         |
| 0           | 1   |          |   | Н             | E | _        | T        |   | 4<br>D | 8<br>E | <u> </u> | X      | Z<br>C | A<br>T | 10  | 2<br>R | 3 | 4<br>P | 2        | 4 | 0   | 3 | 5        | 7 |   |    | R   | В            | R       | NOTE-3                                  |
| -           |     |          |   | П             | _ | Α        | <b>'</b> |   | 4      | 8      |          | X      | Z      | A      | _   | 2      | 3 | 4      | 3        | 4 | 8   | 3 | 5        | / |   |    |     |              |         |                                         |
| 0           | 1   |          |   | Н             | Ε | A        | T        | _ | D      | E      | T        | ^<br>E | C      | T      | 0   | ∠<br>R | 3 | P      | <u> </u> | 4 | 8   | 3 | 5        | 8 |   | _  | R   | ₿            | R       | NOTE-3                                  |
| -           |     |          | - | <del></del> - | _ |          | Ė        | - | 4      | 8      | _        | Н      | S      | _      | 2   | 2      | 1 | 9      | Α        | - |     | _ | _        | - |   |    |     |              |         |                                         |
| 0           | 1   | <u> </u> |   |               | P | _        | 4        | 8 | 3      | 5      | 7        |        | L      | 0      | С   | A      | L |        | s        | T | A   | R | T        |   |   |    | W   | В            | W       | NOTE-1                                  |
| -           |     |          |   |               | - | <u> </u> |          |   | 4      | 8      |          | Н      | S      | _      | 2   | 2      | 1 | 9      | В        |   |     |   | <u> </u> |   |   |    |     |              |         |                                         |
| 0           | 1   |          |   |               | Р | _        | 4        | 8 | 3      | 5      | 7        |        | L      | 0      | С   | Α      | L |        | S        | Т | 0   | Р |          |   |   | ·  | W   | В            | W       | NOTE-1                                  |
| Ĺ           | 4   |          |   |               |   |          |          |   | 4      | 8      | -        | Н      | S      | _      | 2   | 6      | 5 | 8      |          |   |     |   |          |   |   |    |     |              | <b></b> |                                         |
| )<br>1      | 1   |          |   |               | Р | -        | 4        | 8 | 3      | 5      | 7        |        | L      | 0      | С   | Α      | L |        | R        | Е | S   | Ε | T        |   |   |    | W   | В            | W       | NOTE-1                                  |

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| AREA        | :NIMR                    |     |    | SCALE<br>0                                | 1    | 2            | 3 4         | CAD<br>5 | DR           | AWI  | NG<br>7 |
|-------------|--------------------------|-----|----|-------------------------------------------|------|--------------|-------------|----------|--------------|------|---------|
| SUB AREA    | NIMR SLUDGE PIT          | NO. | 05 | N. C. C. C. C. C. C. C. C. C. C. C. C. C. |      | مَان         | فنطغ        | نظيم     | نتتر         | برك  | ä       |
| DRWG.TYPE   | :INSTRUMENT NAME PLATES  |     |    | DRWG                                      | AREA | Petro<br>ENG | oleum De    |          | nent<br>PROJ |      |         |
| DESCRIPTION | ENGRAVING SCHEDULE (TYPE | — A | )  | NO                                        |      | SECT         | NUMBER 4739 |          | CODE         | SIZE |         |

| a. I |               |                 |    |    |                                                     |   |   |          | Tex | t o    | n n | am | eplo           | ate |    |   |   |   |   |    |   |         |              |     |    |     | уре           |     | <b>N</b> 1.1 |
|------|---------------|-----------------|----|----|-----------------------------------------------------|---|---|----------|-----|--------|-----|----|----------------|-----|----|---|---|---|---|----|---|---------|--------------|-----|----|-----|---------------|-----|--------------|
| Qty  | 1             |                 |    |    | 5                                                   |   |   |          |     | 10     |     |    |                |     | 15 |   |   |   |   | 20 |   |         |              |     | 25 |     | Colou<br>Note |     | Notes        |
| 1    |               |                 |    |    |                                                     |   |   | 4        | 8   | _      | Н   | S  | _              | 2   | 2  | 2 | 0 | Α |   |    |   |         |              |     |    | 147 | <u></u>       |     | NOTE 4       |
| 1    |               |                 |    | Р  |                                                     | 4 | 8 | 3        |     |        |     |    | 0              |     |    | L |   | S | T | Α  | R | Т       |              |     |    | W   | В             | W   | NOTE-1       |
| 1    |               |                 |    |    |                                                     |   |   | 4        |     |        | Н   |    | _              |     |    |   | 0 |   |   |    |   |         |              |     |    | w   | R             | w   | NOTE-1       |
|      |               |                 |    | Р  | _                                                   | 4 | 8 | -        | _   |        |     |    |                |     |    |   |   | S | T | 0  | Р |         |              |     |    |     |               | **  |              |
| 1    |               |                 | _  | _  | _                                                   |   |   | 4        |     |        | -   | _  |                | 4   |    |   |   |   |   |    |   | $\cdot$ | _            |     |    | w   | В             | w   | NOTE-1       |
|      | <u> </u>      | ٥               | ט  | -  | R                                                   | L | E | 4        |     | _      |     | -  |                |     |    |   |   |   |   | L  | V | ᆜ       |              | Н   | Н  |     |               |     |              |
| 1    |               | _               | Α. | N  | V                                                   |   | Т | 4        |     | _<br>R | _   |    | _              |     |    | _ |   |   |   | _  | 9 | _       | V            |     |    | R   | В             | R   | NOTE-3       |
|      |               | -               | ^  | 11 |                                                     |   | - | 4        |     | _      | _   |    | S              |     |    |   |   |   |   | _  | 3 | -       | <del>*</del> |     |    |     |               |     |              |
| 1    | 0             | 7               | С  |    | S                                                   | T | A |          |     |        | _   |    | $\blacksquare$ |     |    |   |   |   | V | _  | 2 | 6       | 6            | 0   |    | W   | В             | W   | NOTE-1       |
|      |               |                 |    |    |                                                     |   |   | 4        | 8   |        | Н   | S  |                | 2   | 6  | 6 | 0 |   |   |    |   |         |              | _   |    |     |               |     |              |
| 1    | Р             | _               | 4  | 8  | 3                                                   | 5 | 8 |          | L   | 0      | С   | Α  | L              |     | L  | 0 | С | Α | L |    | R | Ε       | s            | Ε   | Т  | W   | В             | W   | NOTE-1       |
| 1    |               |                 |    |    |                                                     |   |   | 4        | 8   | -      | Н   | S  | 1              | 2   | 2  | 3 | 0 |   |   |    |   |         |              |     |    | 147 | ſ             | *** | NOTE 4       |
|      |               | L               | 0  | С  | A                                                   | L |   | R        |     |        | E   | T  |                | 4   | 8  | - |   |   | ٧ | _  | 2 | 6       | 6            | 0   |    | W   | B             | W   | NOTE-1       |
| 1    |               |                 |    |    |                                                     |   | 4 | $\vdash$ |     |        |     | 1  | -              | A   | _  |   |   |   |   |    |   |         |              |     |    | R   | R             | R   | NOTE-3       |
|      |               |                 | D  | Р  |                                                     | Α | С | R        | 0   | S      | S   |    | 4              | 8   | _  | U | Z | ٧ | _ | 2  | 6 | 6       | 0            |     |    |     |               |     | NOTE 0       |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    | _              |     |    |   |   |   |   |    |   |         | _            | ,   |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              | . ] |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     | _  |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      |               |                 |    |    |                                                     |   |   |          |     |        |     |    |                |     |    |   |   |   |   |    |   |         |              |     |    |     |               |     |              |
|      | 1 1 1 1 1 1 1 | 1 1 1 A 1 O 1 P | 1  | 1  | 1 P 1 P 1 A U D I 1 T A N 1 O / C 1 P - 4 8 1 L O C | 1 | 1 | 1        | 1   | 1      | 1   | 1  | 1              | 1   | 1  | 1 | 1 | 1 | 1 | 1  | 1 | 1       | 1            | 1   | 1  | 1   | 1             | 1   | 1            |

NOTES:

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| AREA        | : NIMR                   |          |    | SCALE<br>0 | 1            | 2                    | 3 4              | CAD | ) DR         | AWI<br>6 | NG<br>7 |
|-------------|--------------------------|----------|----|------------|--------------|----------------------|------------------|-----|--------------|----------|---------|
| SUB AREA    | NIMR SLUDGE PIT          | NO.      | 05 |            |              |                      | فنطغ             | **  | `            |          | *       |
| DRWG.TYPE   | :INSTRUMENT NAME PLATES  |          |    | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER |     | PROJ<br>CODE | DWG      |         |
| DESCRIPTION | ENGRAVING SCHEDULE (TYPE | <i>P</i> | 4) | NO         | NIM          | 5                    | 4739             | 005 | DQ           | 4        | Α       |

| ē        |     |          |          |   |   |   |   |        |        | Tex    | t o    | n r | nam      | epl      | ate           |        |        |        | *************************************** |          |    |   |   |   |          |    |    | уре           |          |        |
|----------|-----|----------|----------|---|---|---|---|--------|--------|--------|--------|-----|----------|----------|---------------|--------|--------|--------|-----------------------------------------|----------|----|---|---|---|----------|----|----|---------------|----------|--------|
| Issue    | Qty |          |          |   |   |   |   |        |        |        |        |     |          |          |               |        |        |        |                                         |          |    |   |   |   |          |    |    | Colou<br>Note |          | Notes  |
|          |     | 1        |          |   |   | 5 |   |        |        | _      | 10     |     |          |          |               | 15     | _      |        |                                         |          | 20 |   |   |   |          | 25 |    |               | ·<br>    |        |
| 0        | 1   |          |          |   | Р |   | 4 | 8      | 4      | 8      | 9      | Н   | S        | <u> </u> | 2             | 6      | 6      | 1      | A<br>S                                  | _        | Α  | 7 | _ |   |          |    | W  | В             | w        | NOTE-1 |
|          |     |          |          |   | _ | _ | 4 | ٥      | 3      | 5<br>8 | 9      | Н   | L        | U        | 2<br>2        | A<br>6 | L<br>6 | 4      |                                         | ı        | Α  | R | T |   |          |    |    |               |          |        |
| 0        | 1   |          |          |   | P |   | 4 | 8      | 3      | 5      | 9      | П   | ٥        | 0        | C             | o<br>A | b<br>L | 1      | B                                       | Т        | 0  | D |   |   |          |    | W  | В             | w        | NOTE-1 |
|          | -   |          |          |   | 1 |   | _ | -      | 4      | 8      | 1      | Н   | S        | -        | 2             | 6      | 6      | 2      | A                                       | '        |    | 1 |   |   |          |    |    |               |          |        |
| 0        | 1   |          | -        |   | Р | _ | 4 | 8      | 3      | 6      | 0      |     | L        | 0        | C             | A      | L      | _      | S                                       | Т        | A  | R | Т |   |          |    | W  | В             | w        | NOTE-1 |
|          |     |          |          |   |   |   |   |        | 4      | 8      | _      | Н   |          | _        | 2             | 6      | 6      | 2      | В                                       |          |    |   |   |   |          |    |    |               |          |        |
| 0        | 1   |          |          |   | Р | _ | 4 | 8      | 3      | 6      | 0      | Г   | L        | 0        | С             | Α      | L      |        | S                                       | Т        | 0  | Р |   |   |          |    | W  | В             | W        | NOTE-1 |
|          | -   |          |          |   |   |   |   |        | 4      | 8      | -      | Н   | S        | -        | 2             | 6      | 6      | 3      |                                         |          |    |   |   |   |          |    |    |               |          | 11075  |
| 0        | 1   |          |          |   | Р | - | 4 | 8      | 3      | 5      | 9      |     | L        | 0        | С             | Α      | L      |        | R                                       | Ε        | S  | Ε | Т |   |          |    | W  | В             | W        | NOTE-1 |
| 0        | 1   |          |          |   |   |   |   |        | 4      | 8      | -      | Н   | S        | -        | 2             | 6      | 6      | 4      |                                         |          |    |   |   |   |          |    | W  | В             | w        | NOTE-1 |
| Ľ        | 1   |          |          |   | Р | _ | 4 | 8      | 3      | 6      | 0      |     | L        | 0        | С             | A      | L      |        | R                                       | Ε        | S  | Ε | Τ |   |          |    | ** |               |          | NOIE-1 |
| ا را     | 1   |          |          |   |   |   |   | 4      | 8      | -      | L      | 1   | Z        | Α        | _             | 1      | 4      | 5      | 0                                       |          |    |   |   |   |          |    | R  | B             | R        | NOTE-3 |
| <u> </u> |     | 0        | X        | Y | • | S | С | Α      | ٧      | •      | D      | 0   | S        | 1        | Ν             | G      |        | T      | A                                       | N        | К  |   | L | ٧ | L        | •  |    |               | <u> </u> | ,,,,,, |
| 0        | 1   |          |          |   |   |   | _ |        | 4      | 8      | _      | L   | 1        | Α        | _             | 1      | 4      | 4      | 9                                       | L        |    |   |   |   |          |    | w  | В             | w        | NOTE-1 |
| _        |     | 0        | X        | Υ | ٠ | S | С | A      | ٧      | •      | D      | 0   | S        | 1        | N             | G      |        | T      | A                                       | N        | K  |   | L | ٧ | L        | ٠  |    |               |          |        |
| 0        | 1   |          |          |   |   | _ | _ | 4      | 8      | _      | Р      |     | Z<br>8   | A        | <u>-</u><br>5 | 1      | 5      | 1      | 8                                       | _        | 11 |   | _ | _ |          | _  | R  | В             | R        | NOTE-3 |
|          |     | 0        | X        | Υ | ٠ | S | С | A<br>4 | ۷<br>8 | ·      | P<br>P | 4   | Z        | 3<br>A   | <u>э</u>      | 9      | 5      | D<br>1 | 9                                       | Р        | Н  | ٠ | F | Α | <u> </u> | L  | *  | _             |          |        |
| 0        | 1   | 0        | Х        | Υ |   | u | С | ب      | ٥<br>٧ |        | Р      | 4   | 8        | 3        | 6             | 0      | 3      | D      | 9                                       | Р        | Н  |   | F | Α | _        | L  | R  | В             | R        | NOTE-3 |
| H        |     |          | ^        | ' | • | 3 | Ŭ |        | 4      | 8      | _      | P   | ī        | _        | 1             | 5      | 2      | 2      | 1                                       | <u> </u> |    | • | ' | _ | -        | _  |    |               |          |        |
| 0        | 1   | 0        | х        | Υ |   | s | С | Α      | V      |        | Р      | U   | М        | Р        |               | D      | 1      | S      | С                                       |          | Р  | R | E | s | s        |    | W  | В             | W        | NOTE-1 |
|          | 4   |          |          |   |   |   |   |        | 4      | 8      | _      | F   | T        | _        | 1             | 4      | 1      | 5      |                                         |          |    |   |   |   |          |    |    |               | <b></b>  |        |
| 0        | 1   |          | 0        | Х | Υ |   | s | С      | A      | ٧      |        | Р   | U        | М        | Р             |        | D      | ı      | s                                       | С        |    | F | L | 0 | W        |    | W  | В             | W        | NOTE-1 |
|          |     |          |          |   |   |   |   |        |        |        |        |     |          |          |               |        |        |        |                                         |          |    |   |   |   |          |    |    |               |          |        |
|          |     | <u> </u> | <u> </u> |   |   |   |   |        |        |        |        |     | <u> </u> |          |               | _      |        |        |                                         | _        |    |   |   |   |          |    |    |               |          |        |
| ĺ        |     |          |          |   |   |   |   |        |        |        |        |     |          |          |               |        |        |        |                                         |          |    |   |   |   |          |    |    |               |          |        |
|          |     |          |          |   | ĺ |   | ĺ | ĺ      | ĺ      |        |        |     | i        |          |               | ĺ      |        |        |                                         | ĺ        |    |   |   |   |          |    |    | 1             | 1        |        |

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## A-48309 (VENDOR PACKAGE)

| AREA        | : NIMR                   |        | SCALE<br>0 | 1            | 2                    | 3 4           | CAD | ) DR         | AWI | NG<br>7 |
|-------------|--------------------------|--------|------------|--------------|----------------------|---------------|-----|--------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT          | но. 05 |            |              | مَان                 | فنطئ          | مية | نتتر         | 5   |         |
| DRWG.TYPE   | INSTRUMENT NAME PLATES   |        | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER |     | PROJ<br>CODE | DWG |         |
| DESCRIPTION | ENGRAVING SCHEDULE (TYPE | -A)    | NO         | NIM          | 5                    | 4739          | 006 | DQ           | 4   | Α       |

| ne    | 04  |          |   |   |          |   |          |   |          | Tex    | t o | n r | am | epl | ate    |          |        |          |   |   |     |   |   |   |   |    |     | уре           |     | Notos  |
|-------|-----|----------|---|---|----------|---|----------|---|----------|--------|-----|-----|----|-----|--------|----------|--------|----------|---|---|-----|---|---|---|---|----|-----|---------------|-----|--------|
| Issue | Qty | 1        |   |   |          | 5 |          |   |          |        | 10  |     |    |     |        | 15       |        |          |   |   | 20  |   |   |   |   | 25 |     | Colou<br>Note |     | Notes  |
|       |     |          |   |   | <u> </u> | - |          |   | 4        | 8      | -   | Р   | G  | _   | 1      | 5        | 3      | 0        |   |   |     |   |   |   |   | 20 |     |               |     |        |
| 0     | 1   | Р        | U | М | Р        |   | Р        | - | 4        | 8      | 3   | 5   | 7  |     | D      | ı        | S      | С        |   | Р | R   | Ε | S | S |   |    | W   | В             | W   | NOTE-1 |
| 0     | 1   |          |   |   |          |   |          |   | 4        | 8      | ı   | Р   | G  | -   | 1      | 5        | 3      | 1        |   |   |     |   |   |   |   |    | *** | ,             |     | NOTE 4 |
|       | ,   | Р        | U | М | Р        |   | Ρ        | 1 | 4        | 8      | 3   | 5   | 8  |     | ۵      | 1        | S      | С        | ٠ | Р | R   | E | S | S |   |    | W   | В             | W   | NOTE-1 |
| 0     | 1   |          |   |   |          |   |          |   | 4        | 8      | -   | Р   | G  | _   | 1      | 5        | 3      | 2        |   |   |     |   |   |   |   |    | W   | В             | W   | NOTE-1 |
| L     | •   | С        | 0 | М | М        | 0 | N        |   | D        | 1      | S   | С   | •  | L   | 1      | N        | E      |          | Р | R | Ε   | S | S | U | R | Ε  | **  | ט             | **  | NOIL   |
| 0     | 1   |          |   | _ | _        |   |          |   | 4        | 8      |     | Р   | G  | _   | 1      | 5        | 3      | 3        |   |   |     |   |   |   |   |    | w   | В             | w   | NOTE-1 |
|       |     | Р        | R | Ε | S        | S | υ        | R | Ε        |        | Α   | Т   |    | Р   | 1      | G        |        | R        | Ε | С | Ε   | 1 | ٧ | Ε | R |    |     |               |     | ,,,,,, |
| 0     | 1   |          |   |   |          |   |          |   | 4        | 8      |     | Р   | G  | _   | 1      | 5        | 3      | 4        |   |   |     | _ |   |   |   |    | w   | В             | w   | NOTE-1 |
|       |     | Р        | U | М | Р        |   | Р        | _ | 4        | 8      | 3   |     | 9  |     | D      |          | S      | С        | · | Р | R   | Ε | S | S | • |    |     |               |     | 11012  |
| 0     | 1   | _        |   | _ | _        |   |          |   | 4        | 8      |     | Р   | G  | _   | 1      | 5        | 3      | 5        |   | _ |     | ᆜ |   | _ |   |    | w   | В             | w   | NOTE-1 |
|       |     | Р        | U | М | Р        |   | Р        | _ | 4        | 8      | 3   |     | 0  |     | D      |          | S      | С        | · | Р | R   | Ε | S | S | • |    |     |               |     |        |
| ່າ    | 1   | A        |   | 4 | 8        | 3 | 0        | 5 | 4        | 8<br>P | -   | P   | G  | L   | 1<br>A | 5<br>U   | 3<br>N | 8        | Н | F | R   |   | Р | P | E | 0  | w   | В             | W   | NOTE-1 |
|       |     | · ·      |   | Ė | -        | Ë | <u> </u> |   | 4        | 8      | -   | P   | G  | _   | 1      | 5        | 3      | 9        |   | - |     |   | • |   | _ | )  |     |               |     |        |
| 0     | 1   | A        | _ | 4 | 8        | 3 | 0        | 5 | •        | Р      | 1   | G   | _  | L   | A      | U        | N      | <u> </u> | Н | Ε | R   |   | Р | R | E | S  | W   | В             | W   | NOTE-1 |
| _     |     |          |   |   |          |   |          |   | 4        | 8      | _   | Р   | G  | _   | 1      | 5        | 4      | 0        |   | _ | - 1 |   |   |   | _ |    |     |               |     |        |
| 0     | 1   | Α        | _ | 4 | 8        | 3 | 0        | 6 |          | Р      | 1   | G   |    | R   | E      | С        | Ε      | ī        | ٧ | E | R   |   | Р | R | E | s  | W   | В             | W   | NOTE-1 |
| 0     | 1   |          |   |   |          |   |          |   | 4        | 8      | ı   | Р   | G  | 1   | 1      | 5        | 4      | 1        |   |   |     |   |   |   |   |    | 347 |               |     | NOTE 4 |
|       | ı   | Α        | 1 | 4 | 8        | 3 | 0        | 6 |          | Ρ      | 1   | G   |    | R   | E      | С        | Ε      | Ī        | ٧ | E | R   |   | Р | R | E | S  | W   | В             | W   | NOTE-1 |
| 0     | 1   |          |   |   |          |   |          |   | 4        | 8      | -   | Р   | G  | 1   | 1      | 5        | 4      | 2        |   |   |     |   |   |   |   |    | w   | _             | 147 | NOTE 1 |
| L     |     | T        | _ | 4 | 8        | 0 | 7        |   | 1        | N      | L   | E   | T  |     | L      | ı        | N      | Ε        |   | Р | R   | Ε | S | S | • |    | VV  | В             | W   | NOTE-1 |
| 0     | 1   |          |   |   |          |   |          |   | 4        | 8      | _   | Р   | G  | _   | 1      | 5        | 4      | 5        |   |   |     |   |   |   |   |    | W   | В             | w   | NOTE-1 |
| Ľ     |     | T        | _ | 4 | 8        | 0 | 7        |   | В        | Y      | Р   | A   | S  | S   |        | L        |        | N        | Ε |   | Р   | R | E | S | S |    | VV  | В             | VV  | NOTE-1 |
|       |     |          |   |   | _        |   |          |   |          |        |     |     |    |     |        | _        |        |          |   |   |     |   |   |   |   |    |     |               |     |        |
| -     |     | _        |   |   |          |   |          |   | <u> </u> | _      |     |     |    |     |        | _        | _      |          |   |   |     |   |   |   |   |    |     |               |     |        |
| ı     |     | <u> </u> | _ |   | <u> </u> |   |          |   |          |        |     |     |    |     | _      | <u> </u> |        | <u> </u> |   |   |     |   |   |   |   |    |     |               |     |        |
|       |     | İ        | ì | İ | İ        | j | İ        |   |          | İ      |     |     | i  |     | l      | ĺ        | İ      | Ì        |   | 1 | i   | ĺ |   |   |   |    | ì   | i             | i   | į      |

- NOTES: 1) Colour white/black/white unless otherwise indicated.
  - 2) Colour red/white/red unless otherwise indicated.
  - 3) Colour red/black/red unless otherwise indicated.

| AREA        | : NIMR                   |     |    | SCALE<br>0 | 1            | 2                    | 3 4           | CAL | DR           | AWI | NG<br>7 |
|-------------|--------------------------|-----|----|------------|--------------|----------------------|---------------|-----|--------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT          | NO. | 05 | 4          |              | مَان                 | فنطغ          | مية | نتَّة        | 5   |         |
| DRWG.TYPE   | INSTRUMENT NAME PLATES   |     |    | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER |     | PROJ<br>CODE | DWG | -       |
| DESCRIPTION | ENGRAVING SCHEDULE (TYPE | .—A | .) | NO         | NIM          | 5                    | 4739          | 007 | DQ           | 4   | Α       |

| ne       | 01           |          |          |          | Te       | ×t (     | on            | nan          | nep      | late         | •          |          |          |              |          | ype l<br>Colou |   | Notes |
|----------|--------------|----------|----------|----------|----------|----------|---------------|--------------|----------|--------------|------------|----------|----------|--------------|----------|----------------|---|-------|
| Issue    | Qty          |          |          |          |          |          |               |              |          |              |            |          |          |              |          | Joieu<br>Note  |   | Notes |
| _        |              | 1        |          |          |          | 5        |               |              |          |              | 10         |          |          | 13           |          |                |   |       |
| 0        | 1            |          | 4        | 8        | _        |          |               | Ε            |          | 6            |            | 0        |          |              | W        | В              | W |       |
| 0        | 1            |          | 4        | 8        | _        |          |               | Ε            |          | 6            | _          | 0        |          |              | W        | В              | W |       |
| 0        | 1            |          | 4        | 8        | _        |          | В             |              | <u> </u> | 6            | 9          | 0        | 9        |              | W        | В              | W |       |
| 0        | 1            |          | 4        | 8        | _        | J        | В             | E            | _        | 6            | 9          | 1        | 0        |              | W        | В              | W |       |
| 0        | 1            |          | 4        | 8        | 1        | 7        | В             | Ε            | -        | 6            | 9          | 1        | 1        |              | W        | В              | W |       |
|          |              |          |          |          |          |          |               |              |          |              |            |          |          |              |          |                |   |       |
|          |              |          |          |          |          |          |               |              |          |              |            |          |          |              |          |                |   |       |
|          |              |          |          |          |          |          |               |              |          |              |            |          |          |              |          |                |   |       |
|          |              |          |          |          |          |          |               |              |          |              |            |          |          |              |          |                |   |       |
|          |              |          |          |          |          |          |               |              |          |              |            |          |          |              |          |                |   |       |
|          |              |          |          |          |          |          |               |              |          |              |            |          |          |              |          |                |   |       |
|          | <del></del>  |          |          |          |          |          |               |              |          |              |            |          | -        |              |          |                |   |       |
| $\vdash$ |              |          |          |          |          | <u> </u> |               |              |          | _            |            |          |          | $\vdash$     |          |                |   |       |
| · —      |              |          |          |          |          | ļ        |               |              |          | <del> </del> |            | -        |          |              |          |                |   |       |
| <u> </u> |              |          |          |          |          |          |               |              |          | $\vdash$     |            |          | -        |              |          |                |   |       |
|          |              |          |          |          |          | -        | $\vdash$      | H            |          | $\vdash$     | -          |          |          |              |          |                |   |       |
|          |              |          |          |          |          | <u> </u> | <del> -</del> | $\vdash$     | $\vdash$ | $\vdash$     |            | <u> </u> |          |              |          |                |   |       |
|          | ************ | _        |          |          |          |          |               |              | <u> </u> | <del> </del> | -          |          | _        |              |          |                |   |       |
| -        |              | -        |          |          | -        |          |               | -            | -        | $\vdash$     | $\vdash$   | _        | _        |              |          |                |   |       |
| _        |              |          | ┝        |          | _        | ┝        | _             |              |          | $\vdash$     | -          | $\vdash$ | _        | -            |          | ļ              |   |       |
| -        |              | -        |          |          |          |          | -             | -            | ├        | ┝            | ļ          | _        | -        |              |          | ļ              |   |       |
| -        |              | _        |          |          |          | _        | _             | <del> </del> | _        | ├            |            | _        | _        | _            |          |                |   |       |
| -        |              | $\vdash$ | $\vdash$ | $\vdash$ | $\vdash$ | _        |               | -            | $\vdash$ | $\vdash$     | $\vdash$   | -        | -        | <del> </del> |          |                |   |       |
| -        |              | _        | _        | <u> </u> |          | -        |               | <u> </u>     | ļ        | <u> </u>     | -          |          | _        |              |          |                |   |       |
|          |              | <u> </u> |          |          |          |          | _             | <u> </u>     | <u> </u> | ┡            | -          |          | _        | _            | <u> </u> | _              |   |       |
|          |              | ļ        | _        |          | _        | _        |               | _            | _        | <u> </u>     | lacksquare | <u> </u> | <u> </u> | _            |          |                |   |       |
| L        |              |          |          | L        |          |          |               |              |          | lacksquare   | _          |          | L        | L            |          |                |   |       |
| ۱_       |              |          |          | _        |          |          |               | $oxed{oxed}$ | L        | _            | L          |          | <u> </u> | ļ            |          | <u> </u>       |   |       |
| <u> </u> |              | <u> </u> |          |          |          |          |               |              |          |              |            | L        | L        |              |          |                |   |       |

NOTES: 1) Colour white/black/white unless otherwise indicated.

2) Colour red/black/red.

| AREA        | : NIMR                   |     |    | SCALE<br>0 | : —<br>1     | 2<br>                | 3 4           | CAD<br>5 | DR           | AWI | NG<br>7 |
|-------------|--------------------------|-----|----|------------|--------------|----------------------|---------------|----------|--------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT          | NO. | 05 |            |              | مَان                 | فنطغ          | ن<br>میه | نآظ          | 5   |         |
| DRWG.TYPE   | INSTRUMENT NAME PLATES   |     |    | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER |          | PROJ<br>CODE | DWG |         |
| DESCRIPTION | ENGRAVING SCHEDULE (TYPE | -B  | )  | NO         | NIM          | 5                    | 4739          | 009      | DQ           | 4   | Α       |

# I.C.T.D JUNCTION BOXES NIMR SLUDGE PIT

THIS COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT 'DQ' WBS No. NIM.IN.09.011

## APPROVED FOR CONSTRUCTION

| REV | DATE    | BY    | CHE    | CKED   | DESCRIPTION               | MBS NO.   | PDOA       |           |          |
|-----|---------|-------|--------|--------|---------------------------|-----------|------------|-----------|----------|
| DEV |         | DRAWN | TEAML. | J.ENG. | DESCRIPTION               | WBS No.   | PROJ. ENG. | SIGNATURE | Foll     |
| 0   | DEC.'10 | Mrp   | PΤ     | KDA    | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    | IHV.      | 14       |
| Α   | MAR.'11 | KK    | HOL    | Tes    | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    | 4         | ]15      |
|     |         |       |        |        |                           |           |            | SOF       | <u>}</u> |

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

| IN CASE     | OF DEVIATIONS A MARKED OF TRIVE STE | <u> </u> |            | 7147 7       | <u> </u>             | 111 1 110        | 01101 | 1110         | ****  | 7.7.T.A |
|-------------|-------------------------------------|----------|------------|--------------|----------------------|------------------|-------|--------------|-------|---------|
| AREA        | .NIMR                               |          | SCALE<br>0 | 1            | 2                    | 3 4              | CAD   | DR           | AWI   | NG<br>7 |
| SUB AREA    | NIMR SLUDGE PIT                     | 0.5      |            |              |                      | تفطؤ             | **    | •            | تَـرک |         |
| DRWG.TYPE   | .CABLE TERMINATION DETAILS          |          | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER |       | PROJ<br>CODE | DWG   |         |
| DESCRIPTION | :COVER SHEET                        |          | NO         | NIM          | 5                    | 4742             | 001   | DQ           | 4     | Α       |

| DESCRIPTION          | SHEET | REV. 0  | REV. G  | REV. H | REV. I     | REV. 0 | REV. A |
|----------------------|-------|---------|---------|--------|------------|--------|--------|
| COVER SHEET          | 001   | DEC.'10 | MAR.'11 |        |            |        |        |
| REVISION/INDEX SHEET | 002   | DEC.'10 | MAR.'11 |        |            |        |        |
| SPARE                | 003   |         |         |        |            |        |        |
| 48-JBE-6907          | 004   | DEC.'10 | MAR.'11 |        |            |        |        |
| 48-JBE-6908          | 005   | DEC.'10 |         |        |            |        |        |
| 48-JBE-6909          | 006   | DEC.'10 |         |        |            |        |        |
| 48-JBE-6910          | 007   | DEC.'10 |         |        |            |        |        |
| 48-JBE-6911          | 008   |         | MAR.'11 |        |            |        |        |
|                      | 009   |         |         |        |            |        |        |
|                      | 010   |         |         |        |            |        |        |
|                      | 011   |         |         |        | ***        |        |        |
|                      | 012   |         |         |        |            |        |        |
|                      | 013   |         |         |        | AU         |        |        |
|                      | 014   |         |         |        |            |        |        |
|                      | 015   |         |         |        |            |        |        |
|                      | 016   |         |         |        |            |        |        |
|                      | 017   |         |         |        | ********** |        |        |
|                      | 018   |         |         |        |            |        |        |
|                      | 019   |         |         |        |            |        |        |
|                      | 020   |         |         |        |            |        |        |
|                      | 021   |         |         |        |            |        |        |
|                      | 022   |         |         |        |            |        |        |
|                      | 023   |         |         |        |            |        |        |
|                      | 024   |         |         |        |            |        |        |
|                      | 025   |         |         |        |            |        |        |
|                      | 026   |         |         |        |            |        |        |
|                      | 027   | *****   |         |        |            |        |        |
|                      | 028   |         |         |        |            |        |        |
|                      | 029   |         |         |        |            |        |        |
|                      | 030   |         |         |        |            |        |        |
|                      | 031   |         |         |        | <u></u>    |        |        |
|                      | 032   |         |         |        |            | İ      |        |
|                      | 033   |         |         |        |            |        |        |
|                      | 034   |         |         |        |            |        |        |
| 1                    | 035   | 1       |         |        |            |        |        |
|                      | 036   |         |         |        |            |        |        |

| AREA        | : NIMR                                |       |   | SCALE<br>0 | 1   | 2           | 3 4              | CAI<br>5 | ) DR         | AWI         | NG<br>7 |
|-------------|---------------------------------------|-------|---|------------|-----|-------------|------------------|----------|--------------|-------------|---------|
| SUB AREA    | NIMR SLUDGE PIT                       | NO. O | 5 |            |     | مَان        | فنطغ             | مية      | نتت          | 5           | E.      |
| DOWS TYPE   | DRWG.TYPE : CABLE TERMINATION DETAILS |       |   |            |     | Petro       | oleum De         | 1        |              |             |         |
|             |                                       |       |   |            |     | ENG<br>SECT | SERIAL<br>NUMBER | SHEET    | PROJ<br>CODE | DWG<br>SIZE | REV.    |
| DESCRIPTION | :REVISION/INDEX SHEET                 |       |   | ю          | NIM | 5           | 4742             | 002      | DQ           | 4           | Α       |
|             |                                       |       |   |            |     |             |                  |          |              | l l         |         |

| TAG. No.   | EQUIPMENT  | EXTN. CABLE No. |                   |      | NI L   |                             | J.B. | MULTICORE CABLE | No. |
|------------|------------|-----------------|-------------------|------|--------|-----------------------------|------|-----------------|-----|
| UNIT:48    | CONNECTION | SIZE:<br>TYPE:  |                   | CORE | TERM'L | TYPE, SIZE AND CONNECTED TO | CORE |                 |     |
| , LIA-1447 | +          | E-2706          | 2x2x1.13mm        | BK+B | 1      | 48-E-6907                   | 1BK  |                 |     |
|            | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 2      | XLPEI-MS-SWA-PVCS           | 1B   |                 |     |
| LIZA-1448  | +          | E-2707          | 2x2x1.13mm        | BK+B | 3      | 10x2x0.8MM                  | 2BK  |                 |     |
| LIZA 1110  |            |                 | XLPEI-MS-SWA-PVCS | G+BN | 4      | 48-RTU-0001                 | 2G   |                 |     |
| TIA-1468   | +          | E-2708          | 2x2x1.13mm        | BK+B | 5      |                             | 3B   |                 |     |
|            |            |                 | XLPEI-MS-SWA-PVCS | G+BN | 6      |                             | 3G   |                 |     |
| FI-1414    | +          | E-2709          | 2x2x1.13mm        | BK+B | 7      |                             | 4BK  |                 |     |
|            |            |                 | XLPEI-MS-SWA-PVCS | G+BN | 8      |                             | 4BN  |                 |     |
| SPARE      |            |                 |                   |      | 9      |                             | 5B   |                 |     |
|            |            |                 |                   |      | 10     |                             | 5BN  |                 |     |
|            |            |                 |                   |      | 11     |                             | 6G   |                 |     |
|            |            |                 |                   |      | 12     | :                           | 6BN  |                 |     |
|            |            |                 |                   |      | 13     |                             | 7BK  |                 |     |
|            |            |                 |                   |      | 14     |                             | 7W   |                 |     |
|            |            |                 |                   |      | 15     |                             | 8B   |                 |     |
|            |            |                 |                   |      | 16     |                             | 8W   |                 |     |
| '          |            |                 |                   |      | 17     |                             | 9G   |                 |     |
|            |            |                 |                   |      | 18     |                             | 9W   |                 |     |
|            |            |                 |                   |      | 19     |                             | 10BN |                 |     |
| <u> </u>   |            |                 |                   |      | 20     | ₩                           | 10W  |                 |     |

### NOTE:

1. SCREENS TO BE CONNECTED TO AN ISOLATED EARTH BAR

| AREA        | : NIMR                      |        | SCAL<br>0 | E: —<br>1 | 2                    | 3 4              | CAD<br>5 | ) DR         | AWI<br>6 | NG<br>7 |
|-------------|-----------------------------|--------|-----------|-----------|----------------------|------------------|----------|--------------|----------|---------|
| SUB AREA    | NIMR SLUDGE PIT             | но. О5 |           |           | مَان                 | فنطغ             | مية      | نتت          | 5        | ث       |
| DRWG. TYPE  | : CABLE TERMINATION DETAILS |        | DRWG      | T         | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER | T        | PROJ<br>CODE | DWG      | REV.    |
| DESCRIPTION | : 48-JBE-6907               |        | NO        | NIM       | 5                    | 4742             | 004      | DQ           | 4        | Α       |

| TAG. No.    | EQUIPMENT  |                | ABLE No.          |      | J.B.   | MULTICORE CABLE             | No.  |
|-------------|------------|----------------|-------------------|------|--------|-----------------------------|------|
| UNIT:48     | CONNECTION | SIZE:<br>TYPE: |                   | CORE | TERM'L | TYPE, SIZE AND CONNECTED TO | CORE |
| IZA−1451∟ا∟ | +          | E-2710         | 2x2x1.13mm        | BK+B | 1      | 48-E-6908                   | 1BK  |
|             | ****       |                | XLPEI-MS-SWA-PVCS | G+BN | 2      | XLPEI-MS-SWA-PVCS           | 1B   |
| LIA-1452    | +          | E-2711         | 2x2x1.13mm        | BK+B | 3      | 10x2x0.8MM                  | 2BK  |
|             | -          |                | XLPEI-MS-SWA-PVCS | G+BN | 4      | 48-RTU-0001                 | 2G   |
| PIZA-1516   | +          | E-2712         | 2x2x1.13mm        | BK+B | 5      |                             | 3B   |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 6      |                             | 3G   |
| PDIA-1520   | +          | E-2713         | 2x2x1.13mm        | BK+B | 7      |                             | 4BK  |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 8      |                             | 4BN  |
| PDIA-1521   | +          | E-2714         | 2x2x1.13mm        | BK+B | 9      |                             | 5B   |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 10     |                             | 5BN  |
| SPARE       |            |                |                   |      | 11     |                             | 6G   |
|             |            |                |                   |      | 12     |                             | 6BN  |
|             |            |                |                   |      | 13     |                             | 7BK  |
|             |            |                |                   |      | 14     |                             | 7W   |
|             |            |                |                   |      | 15     |                             | 8B   |
|             |            |                |                   |      | 16     |                             | 8W   |
| '           |            |                |                   |      | 17     |                             | 9G   |
|             |            |                |                   |      | 18     |                             | 9W   |
|             |            |                |                   |      | 19     |                             | 10BN |
| 4           |            |                |                   |      | 20     | <b>*</b>                    | 10W  |

| AREA        | : NIMR                      |        | SCALI<br>0 | E: —         | 2                    | 3 4           | CAD<br>5 | DR           | AWI | NG<br>7 |
|-------------|-----------------------------|--------|------------|--------------|----------------------|---------------|----------|--------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT             | но. 05 |            |              |                      | فنطغ          | **       | •            |     |         |
| DRWG.TYPE   | : CABLE TERMINATION DETAILS |        | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER |          | PROJ<br>CODE | DWG |         |
| DESCRIPTION | . 48-JBE-6908               |        | NO         | NIM          | 5                    | 4742          | 005      | DQ           | 4   | Α       |

| TAG. No.    | EQUIPMENT  | EXTN. CA       | ABLE No.          |      | J.B.   | MULTICORE CABLE             | No.  |
|-------------|------------|----------------|-------------------|------|--------|-----------------------------|------|
| UNIT:48     | CONNECTION | SIZE:<br>TYPE: |                   | CORE | TERM'L | TYPE, SIZE AND CONNECTED TO | CORE |
| Y 1-2342    | +          | E-2715         | 2x2x1.13mm        | BK+B | 1      | 48-E-6909                   | 1BK  |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 2      | XLPEI-MS-SWA-PVCS           | 1B   |
| XZA-2343    | +          | E-2716         | 2x2x1.13mm        | BK+B | 3      | 10x2x0.8MM                  | 2BK  |
| 7,27, 20,70 | _          |                | XLPEI-MS-SWA-PVCS | G+BN | 4      | 48-RTU-0001                 | 2G   |
| HS-2219A    | +          | E-2717A        | 2x2x1.13mm        | BK+B | 5      |                             | 3B   |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 6      |                             | 3G   |
| HS-2219B    | +          | E-2717B        | 2x2x1.13mm        | BK+B | 7      |                             | 4BK  |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 8      |                             | 4BN  |
| HS-2658     | +          | E-2718         | 2x2x1.13mm        | BK+B | 9      |                             | 5B   |
|             | _          |                | XLPEI-MS-SWA-PVCS | G+BN | 10     |                             | 5BN  |
| HS-2220A    | +          | E-2719A        | 2x2x1.13mm        | BK+B | 11     |                             | 6G   |
|             | _          |                | XLPEI-MS-SWA-PVCS | G+BN | 12     |                             | 6BN  |
| HS-2220B    | +          | E-2719B        | 2x2x1.13mm        | BK+B | 13     |                             | 7BK  |
|             |            |                | XLPEI-MS-SWA-PVCS | G+BN | 14     |                             | 7W   |
| HS-2660     | +          | E-2720         | 2x2x1.13mm        | BK+B | 15     |                             | 8B   |
|             | _          |                | XLPEI-MS-SWA-PVCS | G+BN | 16     |                             | 8W   |
| ^PARE       |            |                |                   |      | 17     |                             | 9G   |
|             |            |                |                   |      | 18     |                             | 9W   |
|             |            |                |                   |      | 19     |                             | 10BN |
|             |            |                |                   |      | 20     | <b>V</b>                    | 10W  |

| AREA        | : NIMR                    | SCAL<br>0 | E : —<br>1 | 2                    | 3 4              | CAD | DRA<br>6 | WING    |
|-------------|---------------------------|-----------|------------|----------------------|------------------|-----|----------|---------|
| SUB AREA    | NIMR SLUDGE PIT No. 05    | 7         |            | مَان                 | فنطغ             | مية | ئة تَذ   | 13.     |
| DRWG.TYPE   | CABLE TERMINATION DETAILS | DRWG      | T          | Petro<br>ENG<br>SECT | serial<br>NUMBER |     | PROJ D'  | WG REV. |
| DESCRIPTION | : 48-JBE-6909             | NO        |            | -                    | 4742             | 006 | H        | 1 A     |

| TAG. No.   | EQUIPMENT  | EXTN. CABLE No. |                   |      | J.B.   | MULTICORE CABLE             | No.  |
|------------|------------|-----------------|-------------------|------|--------|-----------------------------|------|
| UNIT:48    | CONNECTION | SIZE:<br>TYPE:  |                   | CORE | TERM'L | TYPE, SIZE AND CONNECTED TO | CORE |
| ' 2661A    | +          | E-2723A         | 2x2x1.13mm        | BK+B | 1      | 48-E-6910                   | 1BK  |
|            | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 2      | XLPEI-MS-SWA-PVCS           | 1B   |
| HS-2661B   | +          | E-2723B         | 2x2x1.13mm        | BK+B | 3      | 10x2x0.8MM                  | 2BK  |
| 110 20015  | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 4      | 48-RTU-0001                 | 2G   |
| HS-2662A   | +          | E-2724A         | 2x2x1.13mm        | BK+B | 5      |                             | 3B   |
| 113 2002/1 | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 6      |                             | 3G   |
| HS-2662B   | +          | E-2724B         | 2x2x1.13mm        | BK+B | 7      |                             | 4BK  |
| 113 20028  | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 8      |                             | 4BN  |
| HS-2663    | +          | E-2725          | 2x2x1.13mm        | BK+B | 9      |                             | 5B   |
| 113 2000   | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 10     |                             | 5BN  |
| HS-2664    | +          | E-2726          | 2x2x1.13mm        | BK+B | 11     |                             | 6G   |
| 1115 200+  | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 12     |                             | 6BN  |
| SPARE      |            |                 |                   |      | 13     |                             | 7BK  |
| J. AIL     |            |                 |                   |      | 14     |                             | 7W   |
|            |            |                 |                   |      | 15     |                             | 8B   |
|            |            |                 |                   |      | 16     |                             | 8W   |
|            |            |                 |                   |      | 17     |                             | 9G   |
|            |            |                 |                   |      | 18     |                             | 9W   |
|            |            |                 |                   |      | 19     |                             | 10BN |
| ₩          |            |                 |                   |      | 20     |                             | 10W  |

| AREA        | : NIMR                       | SCALI<br>0 | 1            | 2     | 3 4           | 5    | DR           | 5<br> | NG<br>7 |
|-------------|------------------------------|------------|--------------|-------|---------------|------|--------------|-------|---------|
| SUB AREA    | NIMR SLUDGE PIT No. 05       | Ş          |              | مَان  | فرطع          | نجية | نتظ          | نرك   | £.      |
| DRWG.TYPE   | : CABLE TERMINATION DETAILS  | DRWG       | AREA<br>CODE | Petro | SERIAL NUMBER | T    | PROJ<br>CODE | DWG   |         |
| DESCRIPTION | : 48-JBE-6910<br>(VENDOR JB) | NO         |              |       | 4742          | 007  | 1            |       | Α       |

| TAG. No.    | EQUIPMENT  | EXTN. CABLE No. |                   |      | J.B.   | MULTICORE CABLE             | No.  |
|-------------|------------|-----------------|-------------------|------|--------|-----------------------------|------|
| UNIT:48     | CONNECTION | SIZE:<br>TYPE:  |                   | CORE | TERM'L | TYPE, SIZE AND CONNECTED TO | CORE |
| اے,         | +          | E-2727          | 2x2x1.13mm        | BK+B | 1      | 48-E-6911                   | 1BK  |
|             | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 2      | XLPEI-MS-SWA-PVCS           | 1B   |
| LIZA-1450   | +          | E-2728          | 2x2x1.13mm        | BK+B | 3      | 10x2x0.8MM                  | 2BK  |
| LIZA-1450   |            |                 | XLPEI-MS-SWA-PVCS | G+BN | 4      | 48-RTU-0001                 | 2G   |
| PIZA-1518   | +          | E-2729          | 2x2x1.13mm        | BK+B | 5      |                             | 3B   |
| 1 12/1 1010 | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 6      |                             | 3G   |
| PIZA-1519   | +          | E-2730          | 2x2x1.13mm        | BK+B | 7      |                             | 4BK  |
| 11271 1010  | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 8      |                             | 4BN  |
| PI-1522     | +          | E-2731          | 2x2x1.13mm        | BK+B | 9      |                             | 5B   |
| , 1 1022    | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 10     |                             | 5BN  |
| FI-1415     | +          | E-2732          | 2x2x1.13mm        | BK+B | 11     |                             | 6G   |
|             | _          |                 | XLPEI-MS-SWA-PVCS | G+BN | 12     |                             | 6BN  |
| SPARE       |            |                 |                   |      | 13     |                             | 7BK  |
| SI /III     |            |                 |                   |      | 14     |                             | 7W   |
|             |            |                 |                   |      | 15     |                             | 8B   |
|             |            |                 |                   |      | 16     |                             | 8W   |
|             |            |                 |                   |      | 17     |                             | 9G   |
|             |            |                 |                   |      | 18     | , i                         | 9W   |
|             |            |                 |                   |      | 19     |                             | 10BN |
| +           |            |                 |                   |      | 20     | <b>V</b>                    | 10W  |

| AREA        | : NIMR                       |        | SCALE<br>0 | : —<br>1     | 2                    | 3 4           | CAD<br>5 | DR           | AWI<br>6 | NG<br>7 |
|-------------|------------------------------|--------|------------|--------------|----------------------|---------------|----------|--------------|----------|---------|
| SUB AREA    | NIMR SLUDGE PIT              | но. 05 |            |              | $\cup$               | فنطغ          | ** *     |              | كرك      | ث       |
| DRWG.TYPE   | : CABLE TERMINATION DETAILS  |        | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER | T        | PROJ<br>CODE | DWG      | REV.    |
| DESCRIPTION | : 48-JBE-6911<br>(VENDOR JB) |        | NO         | NIM          | 5                    | 4742          | 008      | -            |          | 0       |

# INST. IMPULSE LINES/ ELECTRO PNEUMATIC HOOK-UPS

FOR REVISION / INDEX SHEET REFFER SHEETS 002 ~ 004 FOR GENERAL NOTES REFFER SHEET 008 FOR BULK SUMMARY REFFER SHEETS 010 THRU 016

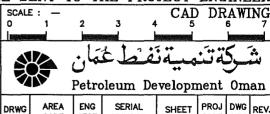
# APPROVED FOR **CONSTRUCTION**

| KEV | DATE    | BY    | CHE    | CKED   | DESCRIPTION               | WBS NU.:  | PDOA      | PPROVAL          |
|-----|---------|-------|--------|--------|---------------------------|-----------|-----------|------------------|
| REV | DATE    | DRAWN | TEAML. | J.ENG. | DESCRIPTION               | WBS NO.:  | REF. IND. | SIGNATURE        |
| 0   | DEC.'10 | Мгр   | ΡŤ     | KDA    | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N   |                  |
| Α   | MAR.'11 | KK    | Blood  |        | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N   | た<br>大<br>ス<br>た |
|     |         |       | ,      |        |                           |           |           | 7                |

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

:NIMR AREA .NIMR SLUDGE PIT NO. 05 SUB AREA . INST. IMPULSE LINES/ELECTRO PNEU. HOOK-UPS DESCRIPTION : COVER SHEET



SHEET PROJ DWG SIZE NUMBER CODE 5 4738 001 DQ NIM



| DESCRIPTION                                      | SHEET | REV. O  | REV. A  | REV. B   | REV. C   | REV. D | REV. E |
|--------------------------------------------------|-------|---------|---------|----------|----------|--------|--------|
| COVER SHEET                                      | 001   | DEC.'10 | MAR.'11 |          |          |        |        |
| REVISION/INDEX SHEET                             | 002   | DEC.'10 | MAR.'11 |          |          |        |        |
| REVISION/INDEX SHEET                             | 003   | DEC.'10 |         |          |          |        |        |
| REVISION/INDEX SHEET                             | 004   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 005   | 520.70  |         | <u> </u> | <u> </u> |        |        |
|                                                  | 006   |         |         |          |          |        |        |
|                                                  | 007   |         |         |          |          |        |        |
| GENERAL NOTES                                    | 008   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 009   |         |         |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 010   | DEC.'10 | MAR.'11 |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 011   | DEC.'10 |         |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 012   | DEC.'10 | MAR.'11 |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 013   | DEC.'10 | MAR.'11 |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 014   | DEC.'10 | MAR.'11 |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 015   | DEC.'10 | L       |          |          |        |        |
| BULK MATERIAL SUMMARY                            | 016   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 017   |         |         |          |          |        |        |
|                                                  | 018   |         |         |          | <u> </u> |        |        |
| RTD/TEMP. TRANSMITTER MOUNTING & CONNECTION DET. | 019   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 020   |         |         |          |          |        |        |
| DIRECTED MOUNTED MOUDLER PRESSURE GAUGE          | 021   | DEC.'10 | MAR.'11 |          |          |        |        |
| REMOTE SEAL DIAPHRAGM TYPE PRESS. INSTRUMENT     | 022   | DEC.'10 | MAR.'11 |          |          |        |        |
| REMOTE SEAL DIAPHRAGM TYPE DIFF.PRES. INSTRUMENT | 023   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 024   |         |         |          |          |        |        |
|                                                  | 025   |         |         |          |          |        |        |
|                                                  | 026   |         |         |          |          |        |        |
|                                                  | 027   |         |         |          |          |        |        |
|                                                  | 028   |         |         |          |          |        |        |
| INSTRUMENT CABLE TRENCHING DETAILS               | 029   | DEC.'10 | MAR.'11 |          |          |        |        |
| INSTR. CABLE CORE MARKERS/LOOMING/SLEEVING       | 030   | DEC.'10 | MAR.'11 |          |          |        |        |
| INSTRUMENT EARTHING DETAILS                      | 031   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 032   |         |         |          |          |        |        |
| PNEUMATIC CONNECTION FOR ESD VALVES              | 033   | DEC.'10 | MAR.'11 |          |          | l      |        |
| AIR SUPPLY DETAILS AS-2 IPF VALVES               | 034   | DEC.'10 | MAR.'11 |          |          |        |        |
|                                                  | 035   |         |         |          |          |        |        |

| AREA        | :NIMR                                  |         | SCALE<br>0 | 1            | 2           | 3 4              | CAD    | DR.          | AWI         | ₹<br>7 |
|-------------|----------------------------------------|---------|------------|--------------|-------------|------------------|--------|--------------|-------------|--------|
| SUB AREA    | :NIMR SLUDGE PIT                       | NO. 05  |            |              | نممار       | تفاط             | نظيم   | ؾٛڐ          | ثكركا       | 4      |
|             | INCT INDUIGE LINES /ELECTRO DUELL LIGO | NY LIDO |            | P            | etrol       | eum De           | velopn | nent         | 0ma         | ın     |
| DRWG.TYPE   | INST. IMPULSE LINES/ELECTRO PNEU. HOC  | JK-UPS  | DRWG       | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER | SHEET  | PROJ<br>CODE | DWG<br>SIZE | REV.   |
| DESCRIPTION | .REVISION/INDEX SHEET                  | •       | NO         | NIM          | 5           | 4738             | 002    | DQ           | <b>4</b> 4  | Α      |
|             |                                        |         |            | İ            |             |                  |        |              | l           |        |

| DESCRIPTION                                     | SHEET | REV. 0  | REV. A  | REV. B | REV. C | REV. D | REV. E |
|-------------------------------------------------|-------|---------|---------|--------|--------|--------|--------|
|                                                 | 036   |         |         |        |        |        |        |
|                                                 | 037   |         |         |        |        |        |        |
|                                                 | 038   |         |         |        |        |        |        |
|                                                 | 039   |         |         |        |        |        |        |
|                                                 | 040   |         |         |        |        |        |        |
| HOOK-UP DETAILS - SOLENOID VALVE                | 041   | DEC.'10 | MAR.'11 |        |        |        |        |
| HOOK-UP DETAILS - TRANSMITTERS                  | 042   | DEC.'10 |         |        |        |        |        |
| HOOK-UP DETAILS TYPICAL - SWITCHES/PUSH BUTTONS | 043   | DEC.'10 | MAR.'11 |        |        |        |        |
|                                                 | 044   |         |         |        |        |        |        |
| HOOK-UP DETAILS - HEAT DETECTOR                 | 045   | DEC.'10 | MAR.'11 |        |        |        |        |
| HOOK-UP DETAILS - HOOTER                        | 046   | DEC.'10 | MAR.'11 |        |        |        |        |
| HOOK-UP DETAILS - ULTRASONIC FLOW METER         | 047   | DEC.'10 | MAR.'11 |        |        |        |        |
| HOOK-UP DETAILS - JUNCTION BOX                  | 048   | DEC.'10 | MAR.'11 |        |        |        |        |
|                                                 | 049   |         |         |        |        |        |        |
|                                                 | 050   |         |         |        |        |        |        |
|                                                 | 051   |         |         |        |        |        |        |
|                                                 | 052   |         |         |        |        |        |        |
|                                                 | 053   |         |         |        |        |        |        |
|                                                 | 054   |         |         |        |        |        |        |
|                                                 | 055   |         |         |        |        |        |        |
|                                                 | 056   |         |         | -      |        |        |        |
|                                                 | 057   |         |         |        |        |        |        |
|                                                 | 058   |         |         |        |        |        |        |
|                                                 | 059   |         |         |        |        |        |        |
|                                                 | 060   |         |         |        |        |        |        |
|                                                 | 061   |         |         |        |        |        |        |
|                                                 | 062   |         |         |        |        |        |        |
|                                                 | 063   |         |         |        |        |        |        |
|                                                 | 064   |         |         |        |        |        |        |
|                                                 | 065   |         |         |        |        |        |        |
|                                                 | 066   |         |         |        |        |        |        |
|                                                 | 067   |         |         |        |        |        |        |
|                                                 | 068   |         |         |        |        |        |        |
|                                                 | 069   |         |         |        |        |        |        |
|                                                 | 070   |         |         |        |        |        |        |

| AREA        | : NIMR                                 |        |    |              | 2<br>                                              | 3 4           | CAD                                              | DR <sub>2</sub> | AWI) | NG<br>7 |
|-------------|----------------------------------------|--------|----|--------------|----------------------------------------------------|---------------|--------------------------------------------------|-----------------|------|---------|
| SUB AREA    | NIMR SLUDGE PIT                        | NO. 05 |    |              | _                                                  | تفثط          | **                                               | ~               | تَ   | *       |
| DRWG.TYPE   | . INST. IMPULSE LINES/ELECTRO PNEU. HO | OK-UPS |    | AREA<br>CODE | etrol<br>ENG<br>SECT                               | SERIAL NUMBER | SHEET                                            | PROJ<br>CODE    | DWG  | REV.    |
| DESCRIPTION | REVISION/INDEX SHEET                   |        | NO |              | <del>†                                      </del> | 4738          | <del>                                     </del> |                 |      |         |

| DESCRIPTION                                     | SHEET | REV. 0  | REV. A  | REV. B | REV. C | REV. D  | REV. E |
|-------------------------------------------------|-------|---------|---------|--------|--------|---------|--------|
| TYPICAL ARAG. OF BEAM PUMP MONITORING EQUIPMENT | 071   |         |         |        |        | <u></u> |        |
| CLINOMETOR & VIBRATION SW. ON BEAM BUMP         | 072   |         |         |        |        |         |        |
| LIST OF INST. TAGS-CLINOMETER                   | 073   |         |         |        |        |         |        |
| LIST OF INST. TAGS-VIBRATION SWTICH             | 074   |         |         |        |        |         |        |
| LOAD CELL ON BEAM PUMP                          | 075   |         |         |        |        |         |        |
| LIST OF INST. TAGS-LOAD CELL                    | 076   |         |         |        |        |         |        |
|                                                 | 077   |         |         |        |        |         |        |
|                                                 | 078   |         |         |        |        |         |        |
|                                                 | 079   |         |         |        |        |         |        |
| JB SUPPORT FOR BEAM PUMP                        | 080   |         |         |        |        |         |        |
|                                                 | 081   |         |         |        |        |         |        |
|                                                 | 082   |         |         |        |        |         |        |
|                                                 | 083   |         |         |        |        |         |        |
|                                                 | 084   |         |         |        |        |         |        |
| ELECTRICAL HOOK-UP LOAD CELL                    | 085   |         |         |        |        |         |        |
| ELECTRICAL HOOK-UP POSITION SENSOR              | 086   |         |         |        |        |         |        |
| ELECTRICAL HOOK-UP PRESS./TEMP./VIBRATION       | 087   |         |         |        |        |         |        |
| ACC / RPC / POWER DISTRIBUTION BOARD            | 088   | 4.25    |         |        |        |         |        |
| LRPC TERMINATION DETAILS                        | 089   |         |         |        |        |         |        |
|                                                 | 090   |         |         |        |        |         |        |
| TAG PLATE (1/2" PROCESS CONNECTION)             | 091   |         | MAR.'11 |        |        |         |        |
| TAG PLATE (2" INST. PIPE SUPPORT )              | 092   | DEC.'10 | MAR.'11 |        |        |         |        |
|                                                 | 093   |         |         |        |        |         |        |
|                                                 | 094   |         |         |        |        |         |        |
|                                                 | 095   |         |         |        |        |         |        |
|                                                 | 096   |         |         |        |        |         |        |
|                                                 | 097   |         |         |        |        |         |        |
|                                                 | 098   |         |         |        |        |         |        |
|                                                 | 099   |         |         |        |        |         |        |
| INSTRUMENT SUPPORT FOR HEAT DETECTOR            | 100   | DEC.'10 | MAR.'11 |        |        |         |        |
|                                                 | 101   |         |         |        |        |         |        |
| INSTR. MOUNTING SUPPORT TYPE-S3 UNPAVED AREA    | 102   | DEC.'10 |         |        |        |         |        |
| JUNCTION BOX MOUNTING SUPPORT UNPAVED AREA      | 103   | DEC.'10 | MAR.'11 |        |        |         |        |
|                                                 | 104   |         |         |        |        |         |        |
|                                                 | 105   | 1       |         |        |        |         |        |

| AREA        | :NIMR                                  |        |    | 1            | 2                    | 3 4              | CAD |              | AWI | ING<br>7 |
|-------------|----------------------------------------|--------|----|--------------|----------------------|------------------|-----|--------------|-----|----------|
| SUB AREA    | NIMR SLUDGE PIT                        | но. 05 |    |              |                      | فنطغ             |     |              |     | *        |
| DRWG.TYPE   | . INST. IMPULSE LINES/ELECTRO PNEU. HO | OK-UPS |    | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER |     | PROJ<br>CODE | DWG | REV.     |
| DESCRIPTION | :REVISION/INDEX SHEET                  |        | NO |              |                      | 4738             | 004 |              |     | Α        |

#### **DOCUMENTS TO BE REFERRED:**

#### INSTRUMENT IMPULSE LINES

GENERAL NOTES:

STD-5-0811-005-00-4

-006 - 00 - 4

-007 - 00 - 4

#### ELECTRO-PNEUMATIC HOOK-UPS

SYMBOLS & LEGEND SHEET:

STD-5-0803-003-00-4

### INSTRUMENT CABLE & PIPING INSTALLATION

**GENERAL NOTES:** 

STD-5-0801-003-00-4

-004-00-4

-005-00-4-006 - 00 - 4

TYPICAL INSTALLATION DETAILS

STD-5-0801-009-00-4

-010 - 00 - 4

INST. EARTHING PHILOSOPHY

STD-5-0801-013-00-4

INST. CABLE IDENTIFICATION

STD-5-0801-014-00-4

INST. CABLE CORE MARKERS/

STD-5-0801-015-00-4

LOOMING/SLEEVING

INST. CABLE FASTENING/CHANNELS

STD-5-0801-016-00-4

INST. CABLE TRENCH DETAILS

STD-5-0801-017-00-4

INST. CABLE ROUTE MARKER

STD-5-0801-019-00-4 STD-5-0801-031-00-4

CONCRETE BLOCK FOR SUPPORTS IN UNPAVED AREA

TAG PLATE (1/2" PROCESS CONN.)

STD-5-0811-091-00-4

TAG PLATE (2" INST. SUPPORT PIPE)

STD-5-0811-092-00-4

#### NOTE:

- 1) ALL OTHER NECESSARY MATERIAL AND ACCESSORIES WHICH ARE NOT LISTED IN THIS MTO AND NOT LIMITED TO GENERAL ITEMS, SUCH AS CABLE MARKERS, FERRULES, CABLE TIES, MOUNTING SUPPORTS, FIXING BRACKETS, SCREWS, NUTS, WASHERS, STUDS, TRAYS, SPLICE PLATES, TEES, ELBOWS, CHECKNUTS, BRASS OR GALVANISED STEEL END CAPS. CONDUIT. DUCTS, PVC/BRACE MOUTH FOR WATER/FIRE PROOF SEALING, PULL BOXES, SADDLES, SPACERS AND ANY OTHER CONSUMABLES REQUIRED FOR COMPLETION OF INSTALLATION WORK SHALL BE DETAILED/FURNISHED AND PROCURED BY THE CONSTRUCTION CONTRACTOR.
- 2) HOOK-UP SHOWN ON THIS DWG. IS DIAGRAMATIC ONLY. EXACT ORIENTAION, TAPPING POINT ETC .... SHALL BE AS PER PIPING G.A & ISOMETRIC.

| AREA        | : NIMR                                  |        | SCALE<br>0 | : —<br>1     | 2                    | 3 4                        | CAD  | DR.          | AWI]     | NG<br>7 |
|-------------|-----------------------------------------|--------|------------|--------------|----------------------|----------------------------|------|--------------|----------|---------|
| SUB AREA    | NIMR SLUGDE PIT                         | но. 05 |            |              | نحمار                | غنط ع                      | نظيم | نتتز         | ترك      | بد      |
| DRWG.TYPE   | : INST. IMPULSE LINES/ELECTRO PNEU. HOC | K-UPS  |            | AREA<br>CODE | etrol<br>ENG<br>SECT | eum De<br>SERIAL<br>NUMBER | T    | PROJ<br>CODE | DWG      |         |
| DESCRIPTION | :GENERAL NOTES                          |        | NO         | NIM          | 5                    | 4738                       | 008  | DQ           | <b>4</b> | Α       |

|       | , , , , , , , , , , , , , , , , , , , |                      |                                                    |                     |                |
|-------|---------------------------------------|----------------------|----------------------------------------------------|---------------------|----------------|
| QTY   | ITEM                                  | SIZE                 | DESCRIPTION                                        | MATERIAL            | M.E.S.C.       |
| -     | 018                                   | _                    | BAKER CAC 8700 RPC                                 | -                   | 60.64.89.200.9 |
| -     | 019                                   | _                    | LOAD CELL                                          | _                   | 60.64.89.200.X |
| -     | 020                                   | _                    | CLINOMETER                                         | -                   | 60.64.89.200.X |
| -     | 021                                   | _                    | ANTENNA                                            | _                   | 60.64.89.200.X |
| -     | 041                                   | _                    | DOUBLE ISOLATE/VENT ANTI-CONTAMINATION-TYPE 'B'    | AISI 316            | 60.98.56.217.9 |
| -     | 048                                   | _                    | DOUBLE ISOLATE/EQUALIZE/VENT BLOCK-TYPE 'A'        | AISI 316            | 60.98.56.207.9 |
|       | 054                                   | _                    | ISOLATE/VENT GAUGE BLOCK-TYPE 'F'                  | AISI 316            | 60.98.56.315.9 |
|       | 064                                   | _                    | ANTI TAMPER KEY                                    | AISI 316            | 60.98.56.905.1 |
| _     | 076                                   | 3/8"                 | SEAL POT WITH VENT VALVE                           | CS/AISI 316         | 60.98.70.610.1 |
| -     | 301                                   | M20                  | CONDUIT                                            | GALV. STEEL         | XX.XX.XX.XXX.X |
| 13.5m | 302                                   | 25mm DIA             | HEAVY GAUGE CONDUIT                                | GALV. STEEL         | 70.13.04.025.1 |
| -     | 303                                   | M32                  | CONDUIT                                            | GALV. STEEL         | xx.xx.xx.xx    |
| -     | 311                                   | m25                  | PVC CONDUIT                                        | PVC                 | xx.xx.xx.xx    |
| -     | 313                                   | m50                  | PVC CONDUIT                                        | PVC                 | XX.XX.XX.XXX.X |
| _     | 419                                   | 3/8" OD              | TUBING — WALL THICKNESS 0.065"                     | AISI 316            | 74.48.50.055.1 |
| 15m   | 420                                   | -                    | CAPILLARY TUBE (BY VENDOR)                         | SS                  | XX.XX.XX.XXXX  |
| -     | 527                                   | 1/4" NPT             | NEEDLE VALVE - SCREWED                             | AISI 316            | 77.34.08.001.1 |
| _     | 528                                   | 1/2" NPT             | NEEDLE VALVE - SCREWED                             | AISI 316            | 77.34.08.003.1 |
| -     | 651                                   | 1/4" NPT x 35 mm     | HEX PIPE NIPPLE - SCREWED                          | AISI 316            | 76.09.56.001.1 |
|       | 652                                   | 1/2" NPT X 45 mm     | HEX PIPE NIPPLE - SCREWED                          | AISI 316            | 76.09.56.031.1 |
| -     | 743                                   | 3/8" x 1/4" NPT      | MALE CONNECTOR COMPRESSION TYPE                    | AISI 316            | 76.39.27.063.1 |
| -     | 744                                   | 3/8" x 1/2" NPT      | MALE CONNECTOR COMPRESSION TYPE                    | AISI 316            | 76.39.27.065.1 |
| -     | 750                                   | 3/8"                 | UNION ELBOW COMPRESSION TYPE                       | AISI 316            | 76.39.44.065.1 |
| -     | 756                                   | 3/8"                 | PLUG COMPRESSION TYPE                              | AISI 316            | 76.39.67.060.1 |
| -     | 766                                   | 3/8"                 | UNION TEE COMPRESSION TYPE                         | AISI 316            | 76.39.85.063.1 |
| _     | 772                                   | 3/8"                 | UNION COMPRESSION TYPE                             | AISI 316            | 76.39.91.063.1 |
| _     | 780                                   | 3/8" x 1/2" NPT (F)  | BULK HEAD FEMALE CONNECTOR                         | AISI 316            | 76.39.27.105.9 |
| _     | 626                                   | 1/2"NPT x 51 mm      | PIPE NIPPLE, SCREWED                               | CS                  | 76.05.56.482.1 |
|       | 630                                   | 1/2"NPT              | PLUG, SCREWED, HEX. HEAD                           | CS                  | 76.05.66.008.1 |
| _     | 635                                   | 1/2"NPT              | TEE, SCREWED, 3000 # SEAMLESS                      | cs                  | 76.05.84.108.1 |
| _     | 727                                   | 3/8" x DN15          | LAP JOINT COMPRESSION                              | SS                  | 76.39.05.106.1 |
| _     | 920                                   | M4x40x40             | BOLT HEX. HD                                       | GALV                | XX.XX.XX.XXXX  |
| _     | 921                                   | M4                   | NUT HEX. HD                                        | GALV                | XX.XX.XX.XXX   |
| _     | 922                                   | M4                   | WASHER FLAT                                        | GALV                | XX.XX.XX.XXX.X |
|       | 322                                   | INIT                 | TAGILIC LEAT                                       | OAL*                | ^^.^.          |
|       |                                       |                      | SCALE : —                                          |                     | CAD DRAWING    |
| AREA  | :                                     | NIMR                 |                                                    | 3 4                 |                |
| SUB A | AREA :                                | NIMR SLUDGE          | نَمَان 🔼 15 No. 05 🚜 كَمَان اللهِ عَلَيْهِ ا       | <u>ة تَف</u> َطَّ   | شركة تنمب      |
|       | <u> </u>                              | INCTO IMPHILICE LIME | Petro                                              | leum Devel          | opment Oman    |
| DRWG. | TYPE :                                | INDIK. IMPULDE LINE  | S & ELECTRO PNEU. HOOK-UPS DRWG AREA ENG CODE SECT | SERIAL SH<br>NUMBER | PROJ DWG REV.  |
| DESCR | RIPTION :                             | BULK MATER           | IAL SUMMARY NO NIM 5                               | 4738.01             | 10 DQ 4 A      |
|       |                                       |                      |                                                    |                     |                |

| ITEM                                  | QTY         | SIZE                | DESCRIPTION                       | MATERIAL     | M.E.S.C.            |
|---------------------------------------|-------------|---------------------|-----------------------------------|--------------|---------------------|
| Α                                     | -           | 1/4"NPT             | FILTER REGULATOR RANGE 35-275kP   |              | 60.98.34.612.9      |
| В                                     | _           | 1/4"NPT             | FILTER REGULATOR RANGE 0—400kPa   |              | 60.98.34.616.9      |
| С                                     |             | 1/4"NPT             | FILTER REGULATOR RANGE 35-700kP   |              | 60.98.34.700.9      |
| D                                     | _           | 1/2"NPT             | FILTER REGULATOR RANGE 40—1000kPa |              | 60.98.34.XXX.X      |
| E                                     | _           | 1/2"NPT Mx1/2"NPT F | SYPHON(DAMPENER)                  | AISI 316     | 60.98.55.XXX.X      |
| F                                     | _           | 3/8"NPT             | PORT PROTECTOR                    | BRASS        | 60.98.90.XXX.1      |
| G                                     | _           |                     |                                   |              |                     |
| Н                                     | _           | 3/8" NPT            | QUICK EXHAUST VALVE               | ALUMINIUM    | 60.XX.XX.XXX.1      |
|                                       | _           | 1/2" NPT            | DRAIN POT AS PER STD-5-0802-11    | CARBON STEEL | 60.XX.XX.XXX.X      |
| J                                     |             | 1/2" NPT M          | BLEEDER VALVE                     | AISI 316     | 60.XX.XX.XXX.X      |
| K                                     |             |                     |                                   |              |                     |
| <br> <br>                             | 140m        | 2x2.5SQ.mm          | CABLE XLPEI-SWA-PES: BLACK        |              | xx.xx.xx.xxx.x      |
| м                                     | 200m        | 3x2.5SQ.mm          | CABLE XLPEI-SWA-PES: BLACK        |              | 68.44.14.303.1      |
| N                                     |             | 21x2.5SQ.mm         | CABLE XLPEI-SWA-PES: BLACK        |              | 68.44.14.953.9      |
| 0                                     | 780m        | 2x2x1.13mm          | CABLE XLPEI-MS-SWA-PVCS: BLACK    |              | xx.xx.xx.xxxxx      |
| Р                                     | 800m        | 10x2x0.8mm          | CABLE XLPEI-MS-SWA-PVCS: GREEN    |              | xx.xx.xx.xxxxx      |
| Q                                     | _           | 20x2x0.8mm          | CABLE XLPEI-MS-SWA-PVCS: GREEN    |              | xx.xx.xx.xxxxx      |
| R                                     | _           | 19 ~ 6mm            | CABLE SHRINK ON SLEEVE (BLUE)     | POLYOLEFIN   | xx.xx.xx.xxxxx      |
| S                                     | _           | 38 ~ 19mm           | CABLE SHRINK ON SLEEVE (BLUE)     | POLYOLEFIN   | xx.xx.xx.xx.x       |
| Т                                     | _           | 1x2x0.8mm           | CABLE PEI-MS-SWA-PVC : BLACK      | _            | xx.xx.xx.xx.x       |
| T1                                    | <del></del> | 4x0.8mm             | SPECIAL CABLE (BY VENDOR)         |              | xx.xx.xx.xx.x       |
| T2                                    | _           | 3x0.8mm             | SPECIAL CABLE (BY VENDOR)         | _            | xx.xx.xx.xxxxx      |
| <sub>T3</sub>                         |             | _                   | CABLE GLAND (BY VENDOR)           |              | xx.xx.xx.xxx.x      |
| ΙU                                    |             | 2x2x0.8mm           | CABLE PEI-MS-SWA-PVC : BLACK      | _            | xx.xx.xx.xx.x       |
| \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | _           | M20                 | JUNCTION BOX                      | MILD STEEL   | 68.76.27.XXX.9      |
| w                                     |             | 50mm                | PERFORATED CABLE TRAY             | CARBON STEEL | 68.76.54.XXX.1      |
| X                                     | 25pcs       | M20                 | LOCKNUT                           | BRASS        | 68.80.58.068.1      |
| Y                                     | 10pcs       | M25                 | LOCKNUT                           | BRASS        | 68.80.58.072.1      |
| Z                                     |             | M32                 | LOCKNUT                           | BRASS        | 68.80.58.076.1      |
| AREA                                  | :NI         | MR                  | SCALE: - 0 1                      | -<br>2 3     | CAD DRAWING         |
| SUB A                                 | irea : NI   | MR SLUD             | GE PIT NO. 05                     | فنط عُمَان   | شكةتنمية            |
| DRWG.                                 | TYPE INC    | STR. IMPULSE I      | INES & ELECTRO PNEU. HOOK-UPS     | """ I F      | evelopment Oman     |
| DK WG.                                |             |                     | DRWG CO                           |              | SHEET PROJ DWG REV. |
| DESCR                                 | HPTION :BU  | JLK MAIE            | RIAL SUMMARY NO NI                | M 5 4738     | 011 DQ 4 A          |

| ITEM | QTY   | SIZE        | DESCRIPTION                 | MATERIAL     | M.E.S.C.       |
|------|-------|-------------|-----------------------------|--------------|----------------|
| AA   | 44pcs | M20         | CABLE GLAND TYPE-O          | BRASS        | 68.80.58.730.1 |
| AB   | 10pcs | M25         | CABLE GLAND TYPE-B          | BRASS        | 68.80.58.734.1 |
| AC   |       | M32         | CABLE GLAND TYPE-C          | BRASS        | 68.80.58.736.1 |
| AD   | 6pcs  | 1/2"NPTxM20 | ADAPTER FOR CABLE GLAND     | BRASS        | 68.80.58.802.9 |
| AE   |       | 3/4"NPTxM20 | ADAPTER FOR CABLE GLAND     | BRASS        | 68.80.58.804.9 |
| AF   |       | M32xM25     | REDUCER FOR CABLE GLAND     | BRASS        | 68.80.58.820.9 |
| AG   | _     | 1/2"NPT     | BLIND PLUG                  | BRASS        | 68.80.58.XXX.X |
| AH   | _     | 3/4"NPT     | BLIND PLUG                  | BRASS        | 68.80.58.XXX.X |
| Al   | -     | M20         | BLIND PLUG                  | BRASS        | 68.80.58.XXX.X |
| AJ   | _     | M20         | INSULATED ADAPTOR           | BRASS        | 68.80.58.XXX.X |
| AK   | _     | 3/8"NPT     | SOLENOID VALVE 3 WAY Ex(d)  | AISI 316     | 68.98.58.XXX.9 |
| AL   |       | M20         | CABLE GLAND TYPE-A          | BRASS        | 68.80.58.732.1 |
| AM   | _     |             |                             |              |                |
| AN   | _     | 1/2"        | LINE PIPE SCHEDULE-40       | GALV.ST.     | 74.13.08.016.1 |
| AO   |       | 1"          | LINE PIPE SCHEDULE-40       | GALV.ST.     | 74.13.08.026.1 |
| AP   | 19.6m | 2"          | LINE PIPE SCHEDULE-40       | CARBON STEEL | 74.13.10.069.1 |
| AQ   | 2pcs  | 3"          | LINE PIPE SCHEDULE-40       | CARBON STEEL | 74.13.10.103.1 |
| AR   | _     | 2"          | LINE PIPE SCHEDULE-80       | CARBON STEEL | 74.13.12.071.1 |
| AS   | _     | 1/4"NPT     | BALL VALVE SCREWED-800#     | CARBON STEEL | 77.01.00.001.1 |
| AT   |       | 1/2"NPT     | BALL VALVE SCREWED-800#     | CARBON STEEL | 77.01.00.003.1 |
| AU   |       | 1/2"NPT     | GATE VALVE SCREWED-800#     | CARBON STEEL | 77.21.01.003.1 |
| AV   | _     |             |                             |              |                |
| AW   | _     | 1"x1/2"NPT  | BUSHING SCREWED-3000#       | GALV.ST.     | 76.06.14.162.1 |
| AX   |       |             |                             |              |                |
| AY   | _     | 1/2"NPT     | ELBOW 90 DEG. SCREWED-3000# | GALV.ST.     | 76.06.39.008.1 |
| AZ   |       | 1"NPT       | ELBOW 90 DEG. SCREWED-3000# | GALV.ST.     | 76.06.39.016.1 |

| AREA        | :NIMR                                      |        |      | 1            | 2                    | 3 4              | CAI<br>5 | ) DR         | AWI | NG<br>7 |
|-------------|--------------------------------------------|--------|------|--------------|----------------------|------------------|----------|--------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT                            | NO. 05 |      |              | U                    | فنطئ             | ** `     | نتت          |     | ش       |
| DRWG.TYPE   | : INSTR. IMPULSE LINES & ELECTRO PNEU. HOC | )K-UPS | DRWG | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER | T        | PROJ<br>CODE | DWG |         |
| DESCRIPTION | BULK MATERIAL SUMMARY                      |        | МО   | NIM          | 5                    | 4738             | 012      | DQ           | 4   | Α       |



|                 | 0.TV    | 0.75            | DECONOTION                    |              |                |
|-----------------|---------|-----------------|-------------------------------|--------------|----------------|
| ITEM            | QTY     | SIZE            | DESCRIPTION                   | MATERIAL     | M.E.S.C.       |
| 'ВА             | _       | 1/4*NPTx40mm    | NIPPLE SCREWED SCHED 40       | GALV.ST.     | 76.06.56.041.1 |
| BB              | _       | 1/2"NPTx50mm    | NIPPLE SCREWED SCHED 80       | GALV.ST.     | 76.06.56.092.1 |
| ВС              | _       | 1"NPTx50mm      | NIPPLE SCREWED SCHED 80       | GALV.ST.     | 76.06.56.172.1 |
| BD              | _       |                 |                               |              |                |
| BE              | _       | 1/2"NPT         | PLUG SCREWED 3000#            | GALV.ST.     | 76.06.66.008.1 |
| BF              | _       | 1"NPT           | PLUG SCREWED 3000#            | GALV.ST.     | 76.06.66.016.1 |
| BG              |         | 1/2*NPTx1/4*NPT | RED.COUPLING 3000#            | GALV.ST.     | 76.06.70.081.1 |
| вн              | Company |                 |                               |              |                |
| ВІ              | _       | 1/2"NPT         | TEE SCREWED 3000#             | GALV.ST.     | 76.06.84.008.1 |
| BJ              | •       | 1"NPT           | TEE SCREWED 3000#             | GALV.ST.     | 76.06.84.016.1 |
| вк              |         |                 |                               |              |                |
| BL              | _       |                 |                               |              |                |
| вм              |         | 1/2"NPT         | UNION SCREWED 3000#           | GALV.ST.     | 76.06.91.008.1 |
| BN              |         | 1"NPT           | UNION SCREWED 3000#           | GALV.ST.     | 76.06.91.016.1 |
| во              | _       |                 |                               |              |                |
| BP              | 9pcs    | 2"              | CAP BUTT WELDING SCHEDULE 80  | CARBON STEEL | 76.30.18.608.1 |
| BQ              | 2pcs    | 3"x2"           | REDUCER CON.BUTT WELDING TYPE | CARBON STEEL | 76.30.72.235.1 |
| BR              | _       |                 |                               |              |                |
| BS              | _       |                 |                               |              |                |
| вт              | _       |                 |                               |              |                |
| BU              | _       |                 |                               |              |                |
| в۷              | _       |                 |                               |              |                |
| l <sub>BW</sub> | _       | 3/8"NPTx1/4"0D  | MALE CONNECTOR COMPR.TYPE     | AISI 316     | 76.39.27.045.9 |
| <sub>I</sub> вх | _       | 1/2"NPTx1/4"OD  | MALE CONNECTOR COMPR.TYPE     | AISI 316     | 76.39.27.047.9 |
| BY              | _       | 3/8"0Dx3/8"NPT  | MALE CONNECTOR COMPR.TYPE     | AISI 316     | 76.39.27.063.9 |
| BZ              | -       | 1/4"NPTx1/4"OD  | FEMALE CONNECTOR COMPR.TYPE   | AISI 316     | 76.39.27.243.1 |

| AREA        | : NIMR                                     |        | SCALI<br>0 | 1            | 2                    | 3 4           | CAI | ) DR | AWI | NG            |
|-------------|--------------------------------------------|--------|------------|--------------|----------------------|---------------|-----|------|-----|---------------|
| SUB AREA    | NIMR SLUDGE PIT                            | NO. 05 |            |              | مَان                 | فنطغ          | مية | بتتة | 5   | à             |
| DRWG.TYPE   | : INSTR. IMPULSE LINES & ELECTRO PNEU. HOO | K-UPS  | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL NUMBER |     | PROJ | DWG | $\overline{}$ |
| DESCRIPTION | BULK MATERIAL SUMMARY                      |        | NO         | NIM          | 5                    | 4738          | 013 | DQ   | 4   | Α             |



| ITEM | QTY       | SIZE           | DESCRIPTION                  | MATERIAL     | M.E.S.C.       |
|------|-----------|----------------|------------------------------|--------------|----------------|
|      | QTI       |                |                              |              |                |
| CA   |           | 1/4"NPTx3/8"OD |                              | AISI 316     | 76.39.27.261.1 |
| CB   | _         | 1/2"NPTx3/8"OD | FEMALE CONNECTOR COMPR.TYPE  | AISI 316     | 76.39.27.265.1 |
| cc   | 2pcs      | 1/2"NPTx1/2"OD | MALE CONNECTOR COMPR.TYPE    | AISI 316     | 76.39.27.XXX.X |
| CD   | -         | 3/8"OD         | INSULATING UNION COMPR.TYPE  | AISI 316     | 76.39.91.108.9 |
| CE   | _         |                |                              |              |                |
| CF   | 18pcs     | 1/4"NPT        | PLUG SCREWED                 | AISI 316     | 76.39.67.040.1 |
| CG   | _         | 1/4"NPT        | FUSIBLE PLUG                 |              | _              |
| СН   | _         | 1/2"NPT(F)     | NEEDLE VALVE                 | AISI 316     | 77.34.XX.XXX.X |
| CI   |           | 5mm THICK      | ALUMINIUM PLATE              | ALUMINIUM    | 78.01.30.162.1 |
| CJ   | 6.19m     | 50x6mm THICK   | FLAT BAR                     | MILD STEEL   | 78.39.02.121.1 |
| СК   | _         | 10mm THICK     | STEEL PLATE (500x50x10mm)    | MILD STEEL   |                |
| CL   | 0.455Sq.m | 3mm THICK      | STEEL PLATE                  | MILD STEEL   | 78.43.30.108.1 |
| СМ   | 0.245Sq.m | 6mm THICK      | STEEL PLATE                  | MILD STEEL   | 78.43.30.116.1 |
| CN   | 0.64Sq.m  | 10mm THICK     | STEEL PLATE (50x50x10mm)     | MILD STEEL   | 78.43.30.124.1 |
| СО   | _         | 75x40x6x8mm    | U-CHANNEL                    | MILD STEEL   | 78.47.31.XXX.1 |
| СР   | -         | 35x35x4mm      | ANGLE IRON                   | MILD STEEL   | 78.47.01.336.1 |
| CQ   | 4.14m     | 50x50x6mm      | ANGLE IRON                   | MILD STEEL   | 78.47.01.352.1 |
| CR   | 4m        | 1/2"0D         | TUBING WALL THICKNESS 0.048" | AISI 316     | 74.48.50.073.9 |
| cs   | _         |                |                              |              |                |
| СТ   | _         |                |                              | <u> </u>     |                |
| cu   | _         | 1/4"OD         | TUBING WALL THICKNESS 0.036" | AISI 316     | 74.48.50.033.1 |
| cv   | _         | M6x30 MM       | BOLT HEXAGONAL HEAD          | CARBON STEEL | 81.01.77.116.1 |
| CW   | _         | M8×40 MM       | BOLT HEXAGONAL HEAD          | CARBON STEEL | 81.01.77.153.1 |
| l cx | _         | M10x40 MM      | BOLT HEXAGONAL HEAD          | CARBON STEEL | 81.01.77.188.1 |
| CY   | 4pcs      | M10x60 MM      | BOLT HEXAGONAL HEAD          | CARBON STEEL | 81.01.77.192.1 |
| CZ   | -         | M12x60 MM      | BOLT HEXAGONAL HEAD          | CARBON STEEL | 81.01.77.232.1 |

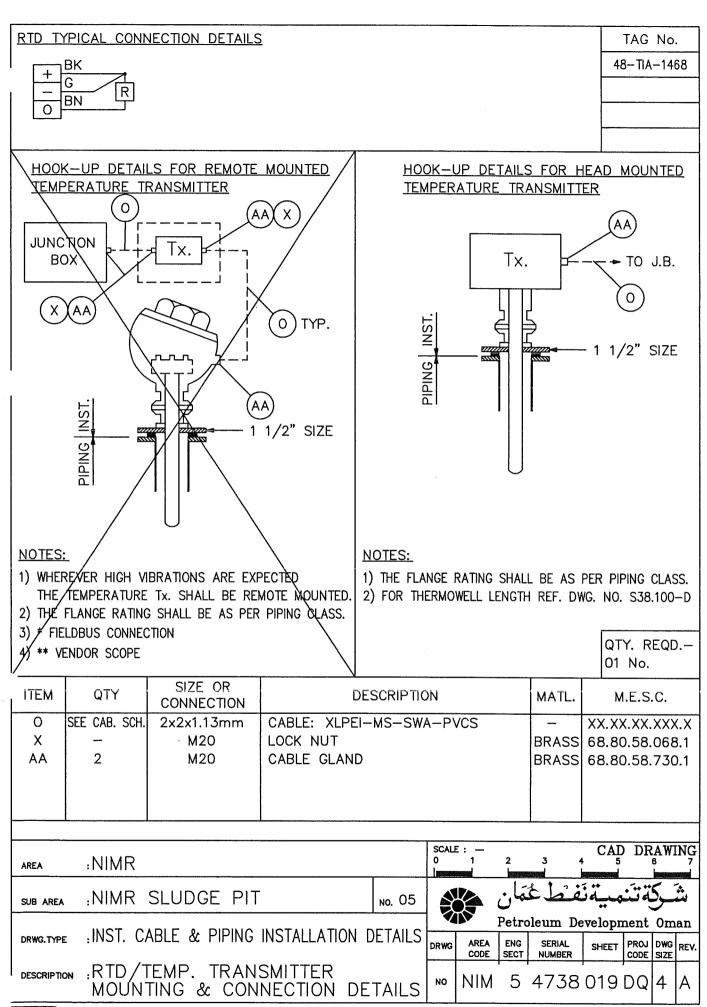
| AREA        | : NIMR                                       |       |      | 1            | 2           | 3 4              | CAD<br>5 | DR.          | AWI]        | NG<br>7 |
|-------------|----------------------------------------------|-------|------|--------------|-------------|------------------|----------|--------------|-------------|---------|
| SUB AREA    | NIMR SLUDGE PIT                              | 0. 05 | ***  |              | تَمَان      |                  | فينه     | نآة          | تسرك        | *       |
|             | INCTO INDUSCE LINES & FLEATDA DUELL HAGI     | LIDC  | V4   |              | Petro       | leum De          | velopn   | nent         | 0ma         | n       |
| DRWG.TYPE   | : INSTR. IMPULSE LINES & ELECTRO PNEU. HOOK- | -022  | DRWG | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER | SHEET    | PROJ<br>CODE | DWG<br>SIZE | REV.    |
| DESCRIPTION | BULK MATERIAL SUMMARY                        |       | NO   | NIM          | 5           | 4738             | 014      | DQ           | 4           | Α       |
|             |                                              |       | 1 1  |              |             |                  |          |              |             |         |

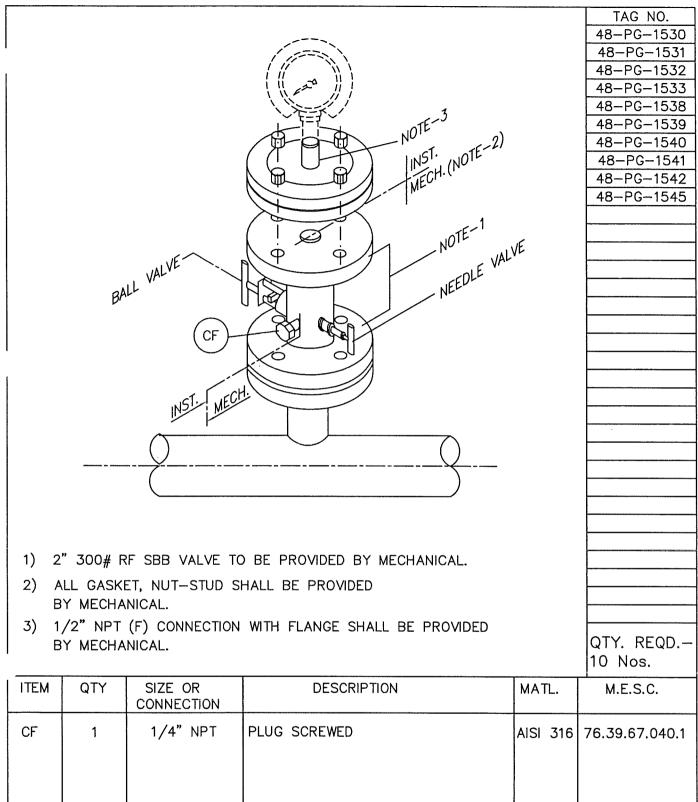


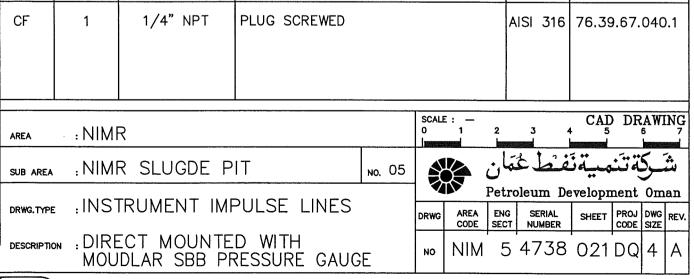
| ITEM | QTY      | SIZE           | DESCRIPTION                                   | MATERIAL     | M.E.S.C.       |
|------|----------|----------------|-----------------------------------------------|--------------|----------------|
| DA   | 16pcs    | M12x110mm      | FOUNDATION BOLT WITH NUT & WASHER             | CARBON STEEL | 81.26.25.133.1 |
| DB   | _        | M6x60mm        | 'J'BOLT HOOK C/W NUT & WASHER                 | CARBON STEEL | 81.26.33.124.1 |
| DC   | -        |                |                                               |              |                |
| DD   |          | 3/8"           | 'U'BOLT C/W 4HEX.NUTS                         | CARBON STEEL | 81.26.86.040.9 |
| DE   | Anguinte |                |                                               |              |                |
| DF   |          | М6             | NUT HEXAGONAL HEAD                            | CARBON STEEL | 81.41.77.014.1 |
| DG   | _        | м8             | NUT HEXAGONAL HEAD                            | CARBON STEEL | 81.41.77.016.1 |
| DH   | 4pcs     | м10            | NUT HEXAGONAL HEAD                            | CARBON STEEL | 81.41.77.018.1 |
| DI   | -        | M12            | NUT HEXAGONAL HEAD                            | CARBON STEEL | 81.41.77.020.1 |
| DJ   | _        |                |                                               |              |                |
| DK   | _        | M6x12.5DIAx1.6 | FLAT WASHER ROUND                             | MILD STEEL   | 81.78.50.714.1 |
| DL   | -        | M8x17DIAx1.6   | FLAT WASHER ROUND                             | MILD STEEL   | 81.78.50.716.1 |
| DM   | _        | M10x21DIAx2    | FLAT WASHER ROUND                             | MILD STEEL   | 81.78.50.718.1 |
| DN   | _        | M12x24DIAx2.5  | FLAT WASHER ROUND                             | MILD STEEL   | 81.78.50.720.1 |
| DO   | _        |                |                                               |              |                |
| DP   | _        | 1/4"           | METERING VALVE                                | AISI 316.    | HOKE 1335 G4Y  |
| DQ   | _        | 1/4"           | NEEDLE VALVE                                  | AISI 316.    | HOKE 3712 G4Y  |
| DR   |          | 1/4"NPT        | BALL VALVE                                    | AISI 316.    | HOKE 7115 F4Y  |
| DS   | _        | m25            | U-BOLTS C/W HEX. NUTS AND WASHERS             | AISI 316.    |                |
| DT   | _        | m50            | U-BOLTS C/W HEX. NUTS AND WASHERS             | AISI 316.    |                |
| DU   | 13pcs    | М8             | U-BOLT FOR 1/2" PIPE C/W NUTS & SPRING WASHER | AISI 316.    | 81.26.86.022.9 |
| DV   | 34pcs    | M10            | U-BOLT FOR 2" PIPE C/W NUTS & SPRING WASHER   | AISI 316.    | 81.26.86.040.9 |
| DW   |          | 1/2"NPT        | GAUGE ADAPTOR - MALE TO FEMALE                | AISI 316.    | 76.09.02.102.9 |
| DX   | _        | 1/2"NPT        | GAUGE ADAPTOR - MALE TO MALE                  | AISI 316.    | 76.09.02.112.9 |
| DY   | _        | 1-1/16"        | BULKHEAD RETAINER                             | AISI 316.    | 76.39.95.102.9 |
| DZ   |          | _              |                                               |              |                |

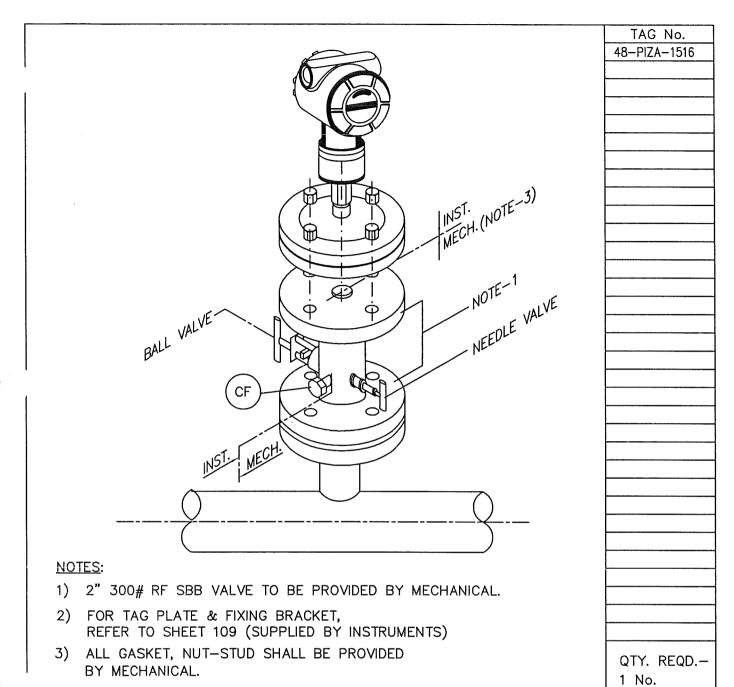
| AREA        | area : NIMR                                |        |      |              | 2                    | 3 4              | CAD | DR           | AWI | NG<br>7       |
|-------------|--------------------------------------------|--------|------|--------------|----------------------|------------------|-----|--------------|-----|---------------|
| SUB AREA    | .NIMR SLUDGE PIT                           | NO. 05 |      |              | تَمان                | فطغ              | مية | نتظ          | ترك | <u>ن</u><br>س |
| DRWG.TYPE   | . INSTR. IMPULSE LINES & ELECTRO PNEU. HOC | K-UPS  | DRWG | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER |     | PROJ<br>CODE | DWG |               |
| DESCRIPTION | BULK MATERIAL SUMMARY                      |        | NO   | NIM          | 5                    | 4738             | 015 | DQ           | 4   | Α             |

| ITEM            | QTY          | SIZE          | DESCRIPTION                           | MATERIAL     | M.E.S.C.            |
|-----------------|--------------|---------------|---------------------------------------|--------------|---------------------|
| EA              |              | 4x140mm       | CABLE TIES 12/BLACK                   | NYLON        | 68.80.50.942.9      |
| EB              | -            |               | CARRIER STRIP BLACK 7 DIGITS          | PVC          | 68.79.02.004.9      |
| EC              |              | 65            | CABLE MARKER TYPE KS                  | NYLON        | 68.79.02.826.9      |
| ED              |              | 250x19x1.6mm  | PLAIN STRIP                           | LEAD         | 68.79.02.018.1      |
| EE              |              | D=1.5 - 2.0mm | CORE MARKER MODEL ZS-5                |              | 68.79.02.802.9      |
| EF              | _            | D=2.0 - 3.2mm | CORE MARKER MODEL ZS-7                |              | 68.79.02.803.9      |
| EG              | _            | D=2.5 - 4.0mm | CORE MARKER MODEL ZS-9                |              | 68.79.02.804.9      |
| EH              | -            | ID=2mm        | SLEEVING, GREEN                       | PVC          | 68.85.10.504.1      |
| EI              | <del>-</del> | 8x375mm       | CABLE TIES 12/BLACK                   | NYLON        | 68.80.50.944.9      |
| EJ              |              | 8x240mm       | CABLE TIES 12/BLACK                   | NYLON        | 68.80.50.946.9      |
| EK              | 100m         | 100mm WIDE    | CABLE CHANNEL                         | GALV.        | 68.76.54.824.9      |
| EL              | _            | 150mm WIDE    | CABLE CHANNEL                         |              | 68.76.54.826.9      |
| <sub>l</sub> EM |              | 200mm WIDE    | CABLE CHANNEL (NOTE-2)                |              | 68.76.54.828.9      |
| EN              | -            | 300mm WIDE    | CABLE CHANNEL (NOTE-2)                |              | 68.76.54.832.9      |
| EO              | 50pcs        | 100mm WIDE    | CABLE CHANNEL BEND (90° FLAT)         |              | 68.76.54.052.9      |
| EP              | _            | 150mm WIDE    | CABLE CHANNEL BEND (90° FLAT)         |              | 68.76.54.054.9      |
| EQ              | _            | 200mm WIDE    | CABLE CHANNEL BEND (90° FLAT)         |              | 68.76.54.056.9      |
| ER              | _            | 300mm WIDE    | CABLE CHANNEL BEND (90° FLAT)         |              | 68.76.54.058.9      |
| ES              | 200pcs       | 1000x244x6mm  | CABLE TILE                            |              | 68.76.81.024.9      |
| ET              | _            | _             | TYPE-A NAME PLATE                     | PLASTIC      | 68.76.81.XXX.X      |
| EU              | _            |               |                                       |              |                     |
| EV              |              |               |                                       |              |                     |
| EW              |              |               |                                       |              |                     |
| EX              |              |               |                                       |              |                     |
| EY              |              |               |                                       |              |                     |
| EZ              |              |               |                                       |              |                     |
| KJ              | 100pcs       | 1/4"x40mm     | BOLTS & NUTS                          | GALV.        | xx.xx.xx.xx         |
| XX              | 15pcs        | 2" (M50)      | EYE BOLT                              | cs           | xx.xx.xx.xx         |
|                 | 50m          |               | ANTENNA CABLE (BY VENDOR)             |              | XX.XX.XX.XXXX       |
| AREA            | . N          | IMR           | SCALE: —                              | 2 3          | CAD DRAWING         |
| ANEA            |              |               |                                       | المثاء الماء |                     |
| SUB /           | AREA : IVI   | MR SLUD       | GE PII   NO. 05                       | Petroleum D  | evelopment Oman     |
| DRWG            | TYPE : IN    | ST. IMPULSE L | INES/ELECTRO PNEU. HOOK-UPS DRWG AREJ | A ENG SERIAL | SHEET PROJ DWG REV. |
| DESC            | RIPTION : B  | ulk mate      | RIAL SUMMARY NO NIN                   |              | 3 016 DQ 4 A        |
| :               |              |               |                                       |              |                     |



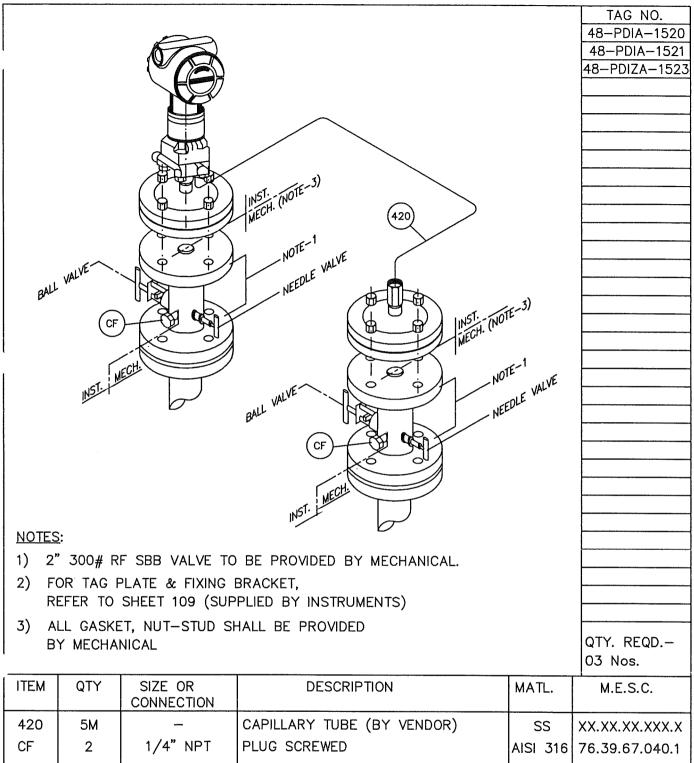




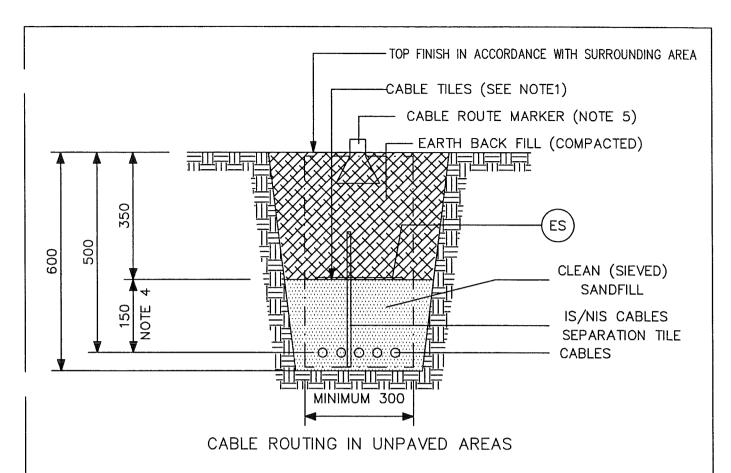


| ITEM                 | QTY                | SIZE OR<br>CONNECTION | DESCRIPTION                             | MATL.          | M.E.S.C.                      |
|----------------------|--------------------|-----------------------|-----------------------------------------|----------------|-------------------------------|
| <del>420</del><br>CF | <del>3M</del><br>1 | 1/4" NPT              | CAPILLARY TUBE (BY VENDOR) PLUG SCREWED | SS<br>AISI 316 | XX.XX.XX.XX<br>76.39.67.040.1 |
|                      |                    |                       |                                         |                |                               |

| AREA        | :NIMR                                        |        |      |              | 2                   | 3 4           | CAD | DR           | AWI            | NG<br>7 |
|-------------|----------------------------------------------|--------|------|--------------|---------------------|---------------|-----|--------------|----------------|---------|
| SUB AREA    | NIMR SLUDGE PIT                              | NO. 05 |      |              | كمار                | فنطاغ         | مية | نةتز         | تَـرک          | ند      |
| DRWG.TYPE   | INST. IMPULSE LINES/ELECTRO PNEU. HOO        | OK-UPS | DRWG | AREA<br>CODE | etro<br>ENG<br>SECT | SERIAL NUMBER |     | PROJ<br>CODE | DWG            |         |
| DESCRIPTION | REMOTE SEAL DIAPHRAGM TO PRESSURE INSTRUMENT | YPE    | МО   | NIM          | 5                   | 4738          | 022 | DQ           | <sub>4</sub> 4 | Α       |



|             |              | 0011112011011             |                          |              |       |              |             |                  |         |              |                | 1    |
|-------------|--------------|---------------------------|--------------------------|--------------|-------|--------------|-------------|------------------|---------|--------------|----------------|------|
| 420         | 5M           | _                         | CAPILLARY TUBE           | E (BY VE     | NDOF  | ₹)           |             | SS               | XX.XX   | ۸.XX.        | XXX            | (.x  |
| CF          | 2            | 1/4" NPT                  | PLUG SCREWED             | PLUG SCREWED |       |              |             | ISI 316          | 76.39   | 9.67.        | 040            | ).1  |
| :           |              |                           |                          |              |       |              |             |                  |         |              |                |      |
|             |              |                           |                          |              |       |              |             |                  |         |              |                |      |
|             |              |                           |                          |              |       |              |             |                  |         |              |                |      |
| NINAD       |              |                           |                          |              |       | E: —         | 2           | 3 4              | CAL     | DR           | AWI            | NĢ   |
| AREA        | :   \        | <u> </u>                  | <del></del>              |              | Issue |              |             |                  |         |              |                |      |
| SUB AREA    | .NIMI        | R SLUDGE P                | 1T                       | но. 05       |       |              | تَمَان      | فتطغ             | ميةدَ   | نةق          | كرك            |      |
|             |              |                           |                          |              |       |              | Petro       | oleum De         | evelopr | nent         | $0 \mathrm{m}$ | an   |
| DRWG.TYPE   | :INS         | IRUMENT IMI               | PULSE LINES              |              | DRWG  | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER | SHEET   | PROJ<br>CODE | DWG<br>SIZE    | REV. |
| DESCRIPTION | REM:<br>DIFF | OTE SEAL D<br>PRESSURE IN | DIAPHRAGM T<br>NSTRUMENT | ΓΥΡΕ         | NO    | NIM          | 5           | 4738             | 023     | 1            |                | Α    |

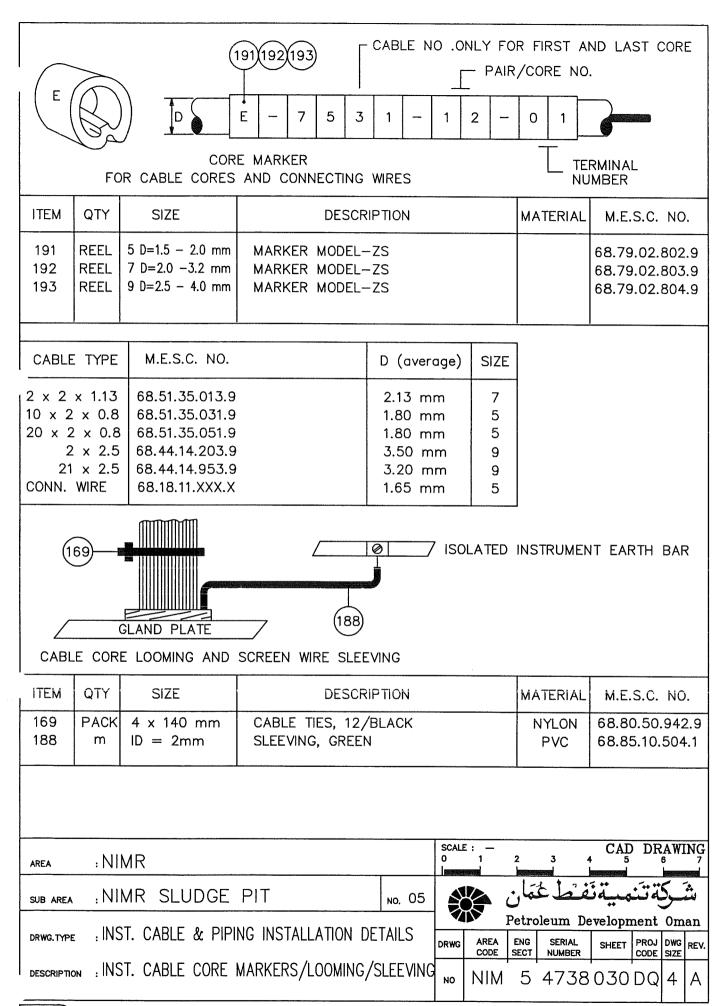


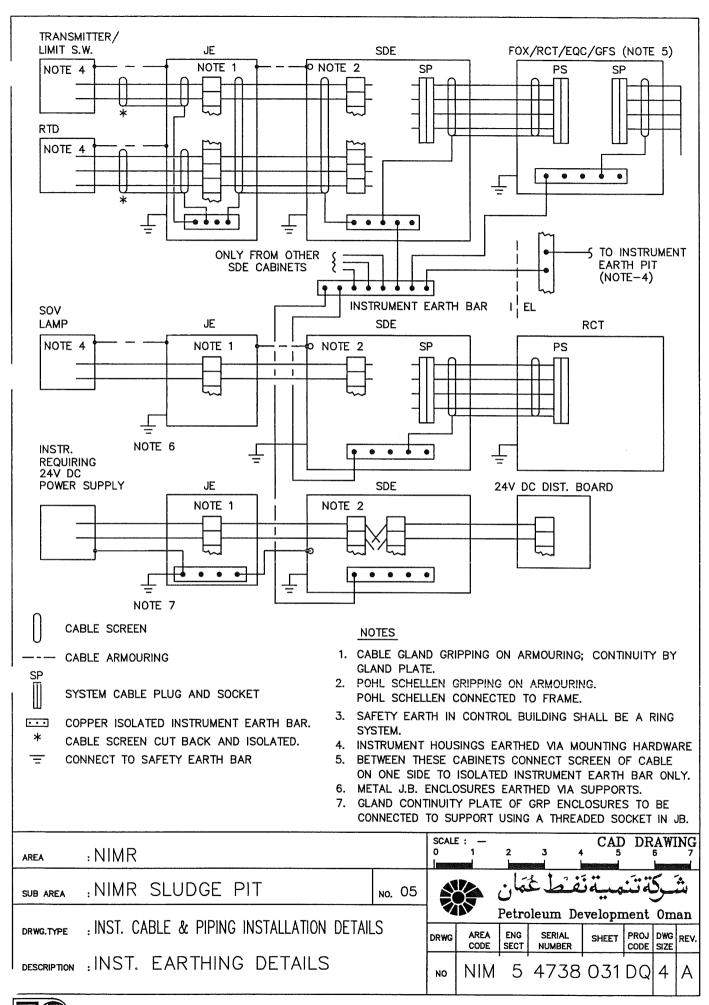
| ITEM | QTY.    | SIZE         | DESCRIPTION | MATERIAL | M.E.S.C. NO.   |
|------|---------|--------------|-------------|----------|----------------|
| ES   | 200 PCE | 1000x244x6mm | CABLE TILE  | _        | 68.76.81.024.9 |

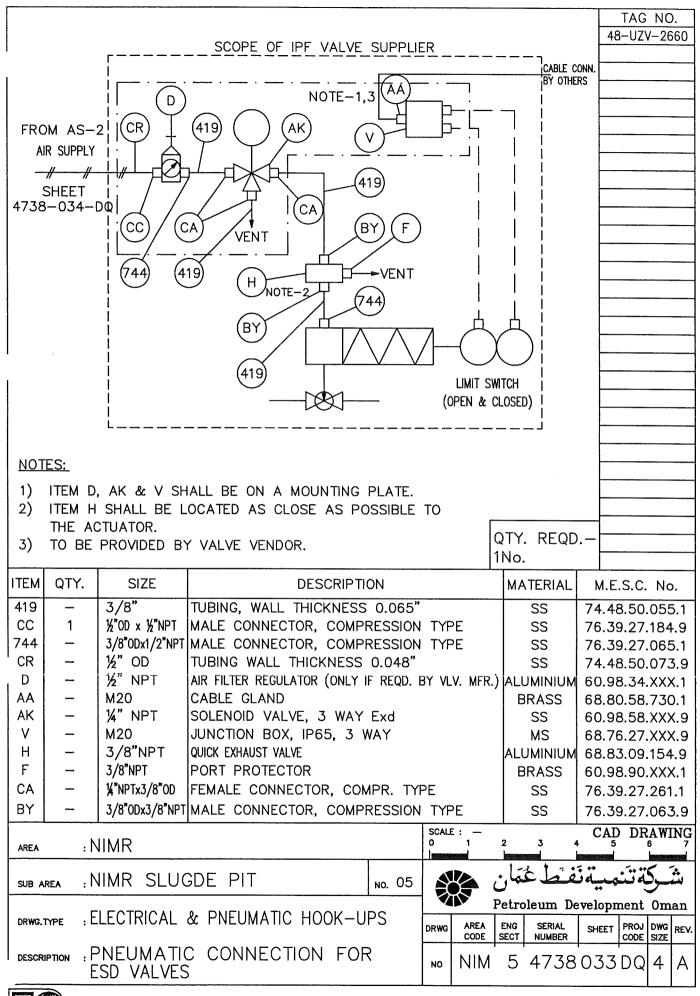
#### **NOTES**

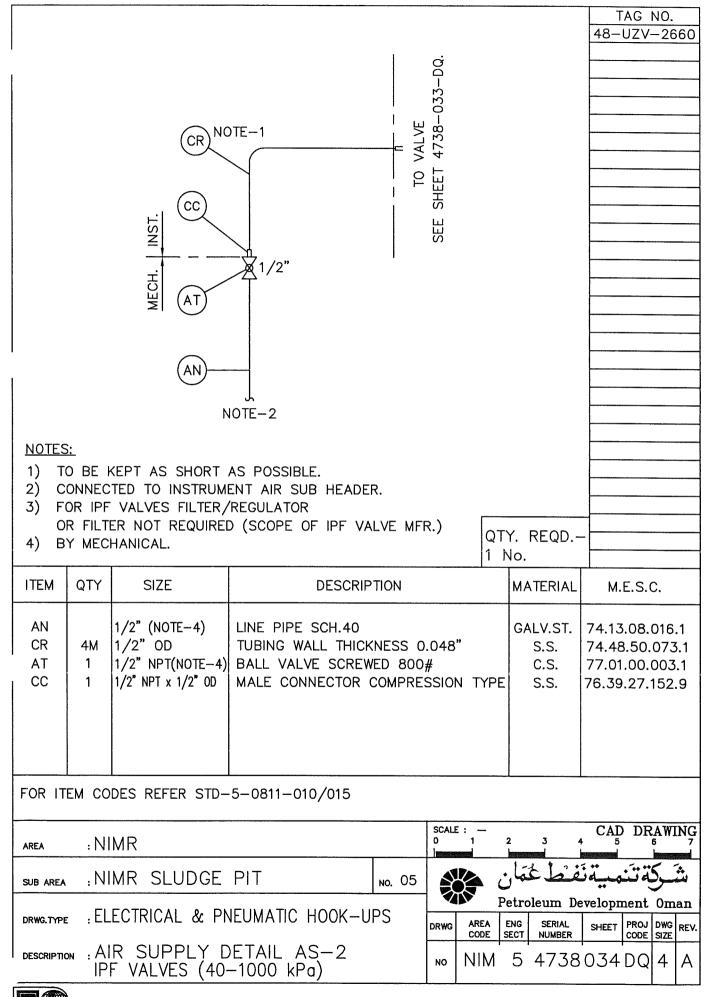
- 1. RECYCLED POLYETHYLENE CABLE TILE. BLACK ON ONE SIDE, OTHER SIDE RED WITH 150mm GREEN TAPE WITH PRINTING "CAUTION INSTRUMENT CABLE BELOW". DRILLED WITH 2No. 15mm DIA HOLES SUPPLIED WITH 2 PCS JOINTING PEGS PER TILE.
- 2. SEPARATE I.S. AND N.I.S. CABLES IN CABLE TRENCHES. USING CABLE TILE ON EDGE AS PARTITION.
- 3. CABLE TRENCHING IN PAVED AREAS: FOR CABLE TRENCHING IN CONCRETE, BRICK PAVED OR TILED AREAS AND FOR ROAD CROSSING DETAILS SEE STANDARD DRAWINGS S 19.001 AND S 19.002.
- 4.250mm IN CASE OF IS/NIS CABLE SEPARATION WITH CABLE TILE.
- 5.REFER STD-5-0801-019

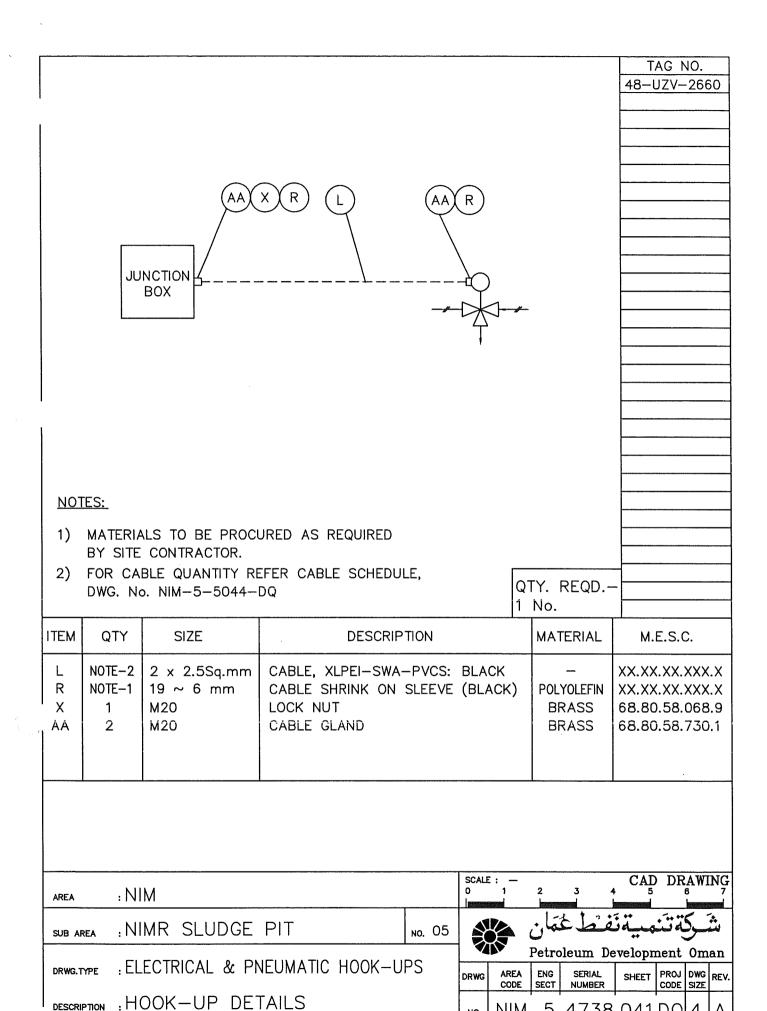
| AREA        | : NIMR                                  |        | SCALE<br>0 | 1            | 2                    | 3 4              | CAI<br>5 | ) DR         | AWI | NG<br>7 |
|-------------|-----------------------------------------|--------|------------|--------------|----------------------|------------------|----------|--------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT                         | но. 05 |            |              | $\cup$               | فنطغ             | **       | `            |     |         |
| DRWG.TYPE   | : INST. IMPULSE LINES/ELECTRO PNEU. HOC | K-UPS  |            | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER | T        | PROJ<br>CODE | DWG |         |
| DESCRIPTION | INST. CABLE TRENCHING DET               | AILS   | NO         | NIM          | 5                    | 4738             | 029      | DQ           | 4   | Α       |







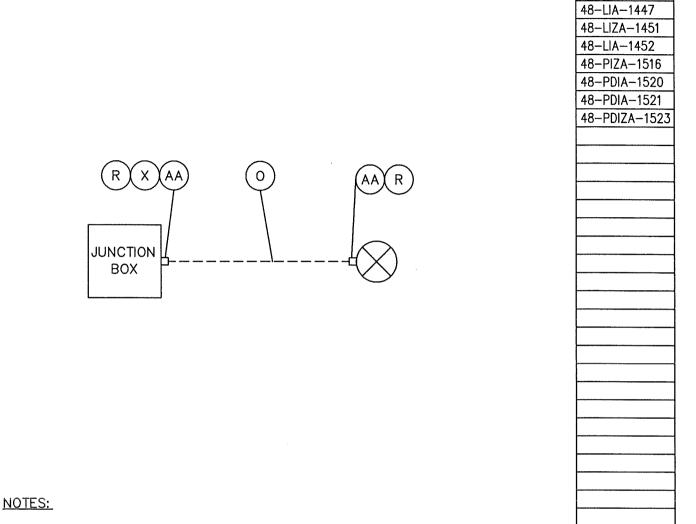




SOLENOID VALVE

MIM

5 4738 041 DQ 4



TAG NO. 48-LIZA-1448

QTY. REQD.:

8 Nos.

| ITEM | QTY | SIZE OR<br>CONNECTION                     | DESCRIPTION                                                                                  | MATERIAL            | M.E.S.C.                                                           |
|------|-----|-------------------------------------------|----------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------|
| 1    |     | 2 x 2 x 1.13mm<br>19 ~ 6 mm<br>M20<br>M20 | CABLE, XLPEI-MS-SWA-PVCS: BLACK<br>CABLE SHRINK ON SLEEVE (BLACK)<br>LOCK NUT<br>CABLE GLAND | POLYOLEFIN<br>BRASS | XX.XX.XX.XXXX<br>XX.XX.XX.XXXX<br>68.80.58.068.9<br>68.80.58.730.1 |

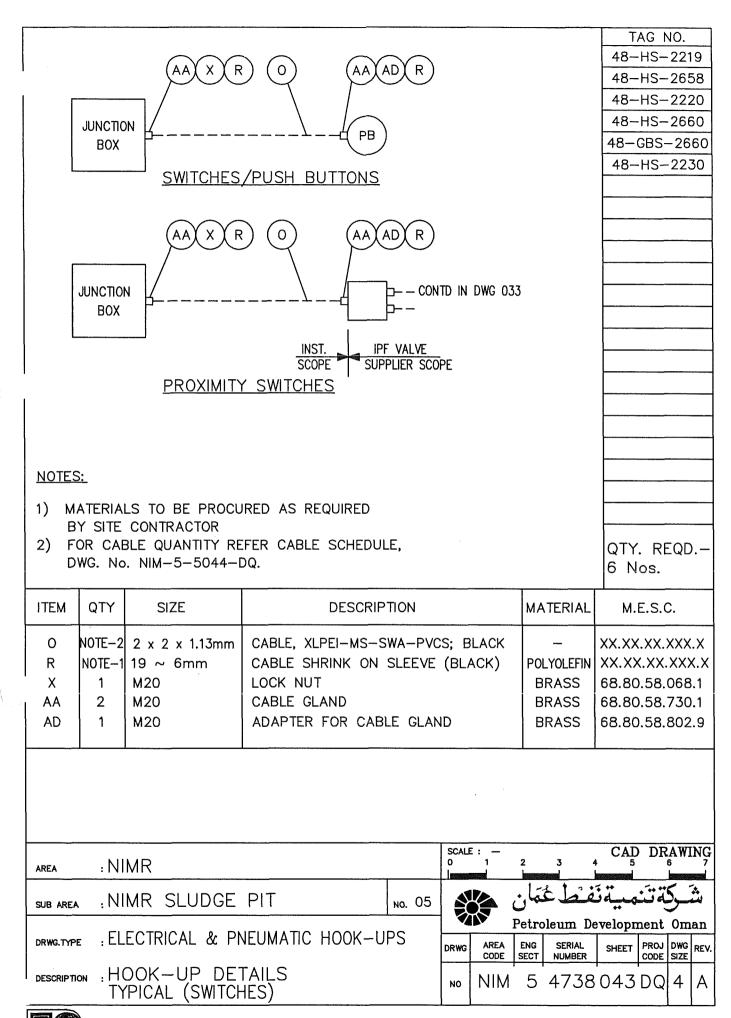
1) MATERIALS TO BE PROCURED AS REQUIRED

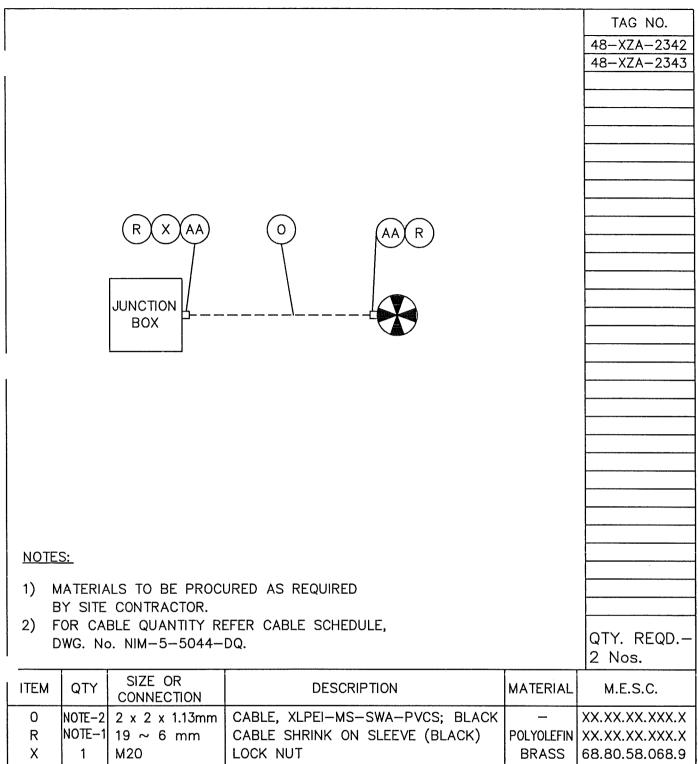
2) FOR CABLE QUANTITY REFER CABLE SCHEDULE,

BY SITE CONTRACTOR.

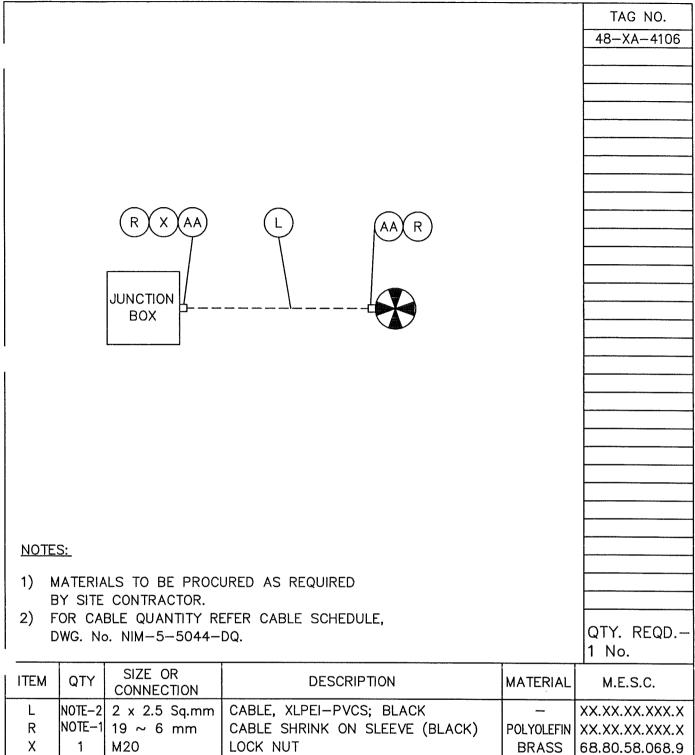
DWG. No. NIM-5-5044-DQ

| AREA        | :NIMR                         |       |    |      | E: _         | 2                                                | 3 4           | CAD<br>5 | DR                                               | AWI | NG<br>7 |
|-------------|-------------------------------|-------|----|------|--------------|--------------------------------------------------|---------------|----------|--------------------------------------------------|-----|---------|
| SUB AREA    | NIMR SLUDGE PIT               | NO. C | 05 |      |              |                                                  | فنطغ          | **       | `                                                |     | *       |
| DRWG.TYPE   | ELECTRICAL & PNEUMATIC HOOK-L | IPS   |    | DRWG | AREA<br>CODE | Petro<br>ENG<br>SECT                             | SERIAL NUMBER |          | PROJ<br>CODE                                     | DWG |         |
| DESCRIPTION | :HOOK-UP DETAILS TRANSMITTERS |       |    | NO   | NIM          | <del>                                     </del> | 4738          | 042      | <del>                                     </del> |     | Α       |

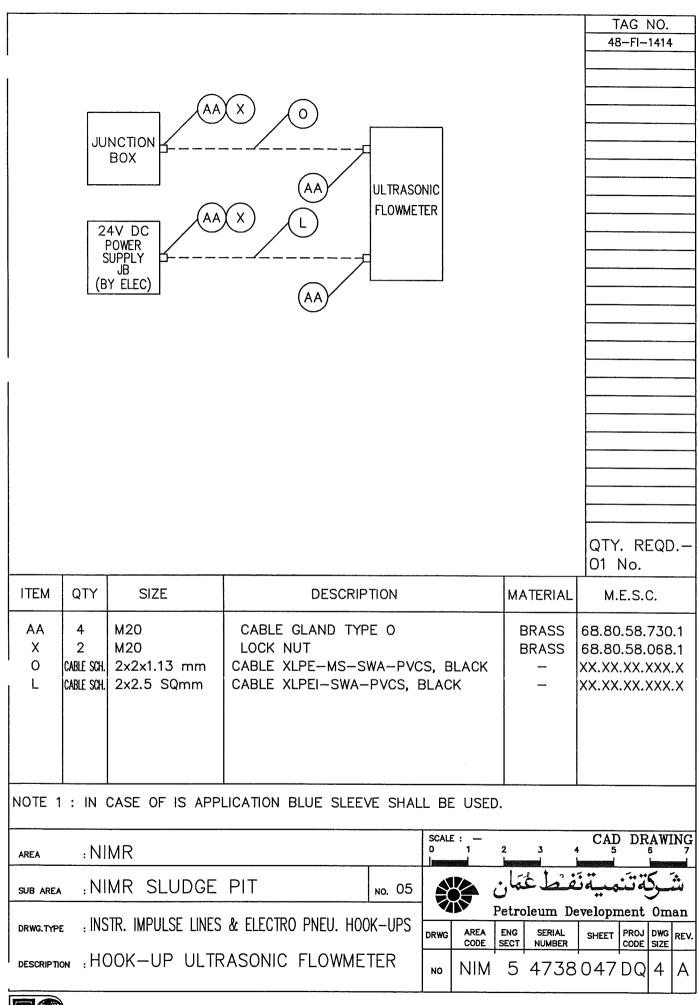


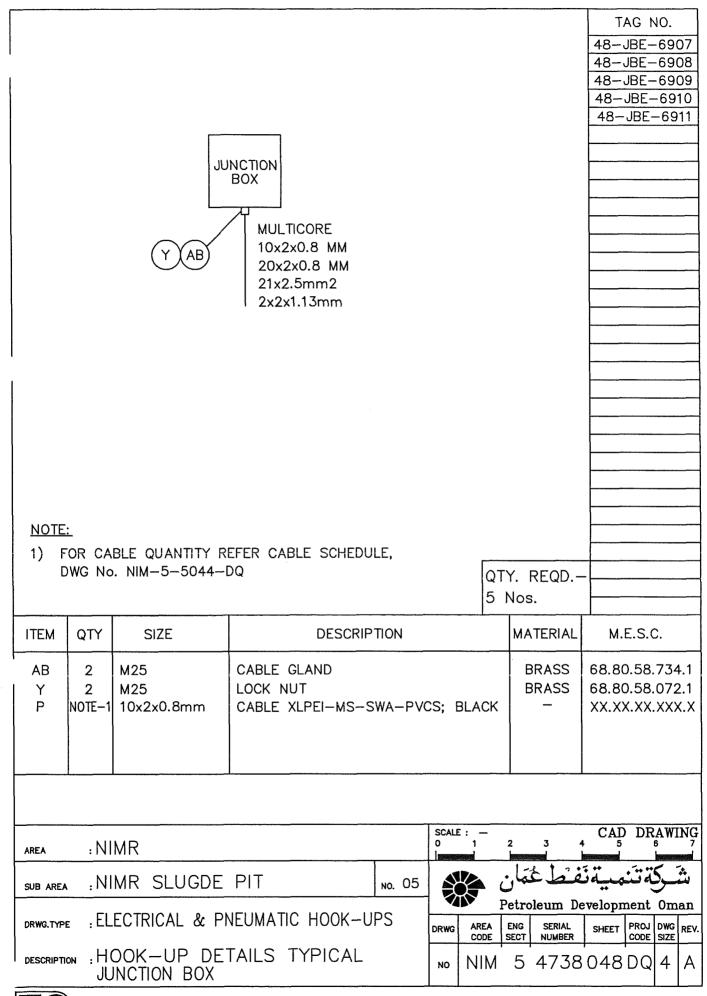


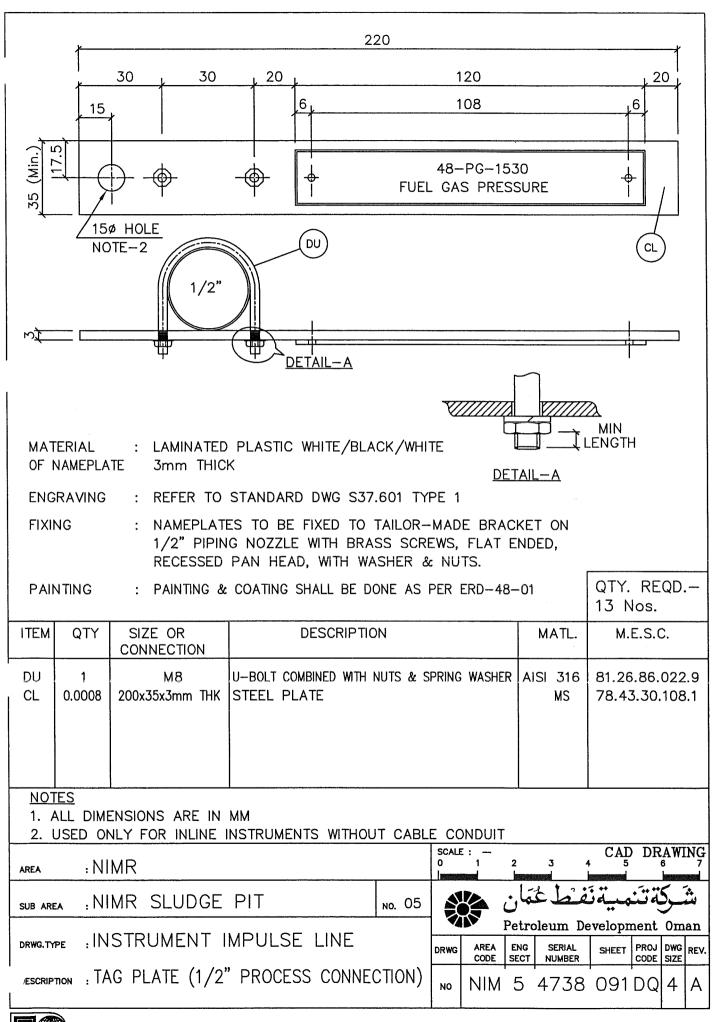
| X<br>AA    | 1 2  | M20<br>M20                | LOCK NUT CABLE GLAND | SLEEVE | (BLF       |              | E           |                  | 68.80<br>68.80 | .58.0        | 068. | 9       |
|------------|------|---------------------------|----------------------|--------|------------|--------------|-------------|------------------|----------------|--------------|------|---------|
| AREA       | : NI | MR                        |                      |        | SCALI<br>0 | E : —        | 2           | 3 4              | CAD            | DR.          | AWI  | NG<br>7 |
| SUB AREA   | .NI  | MR SLUDGE                 | PIT                  | но. 05 |            | -<           | _           | فنطغ             |                | -            |      | 4       |
| DRWG.TYPE  | :EL  | ECTRICAL & P              | NEUMATIC HOOK-L      | JPS    | DRWG       | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER |                | PROJ<br>CODE | DWG  |         |
| DESCRIPTIO |      | OOK—UP DE<br>EAT DETECTOR |                      |        | МО         | NIM          | 5           | 4738             | 045            | DQ           | 4    | Α       |

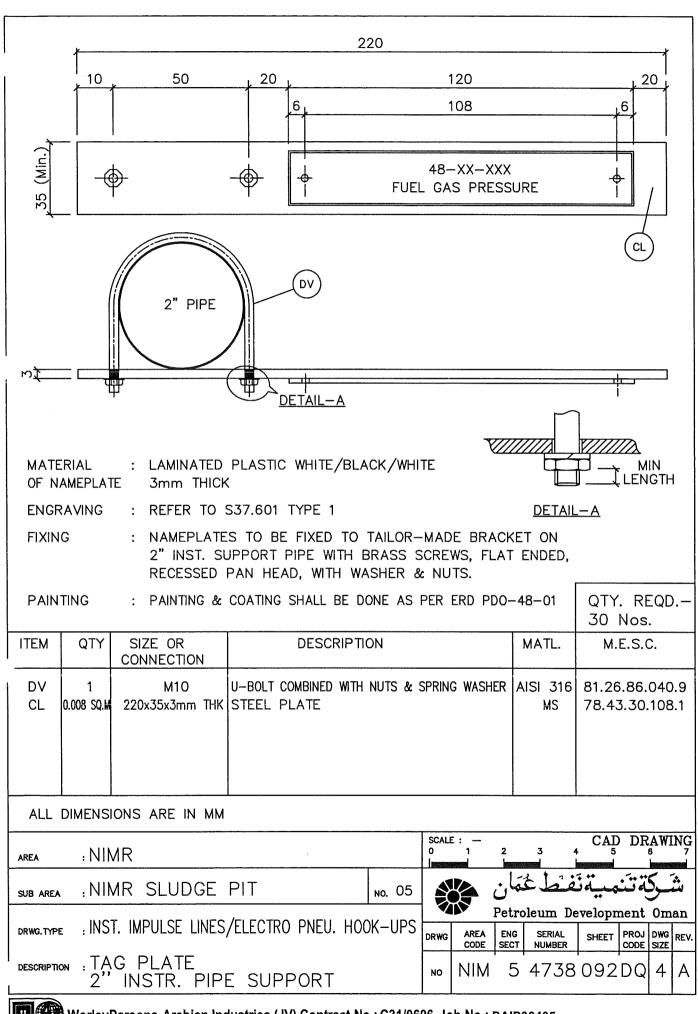


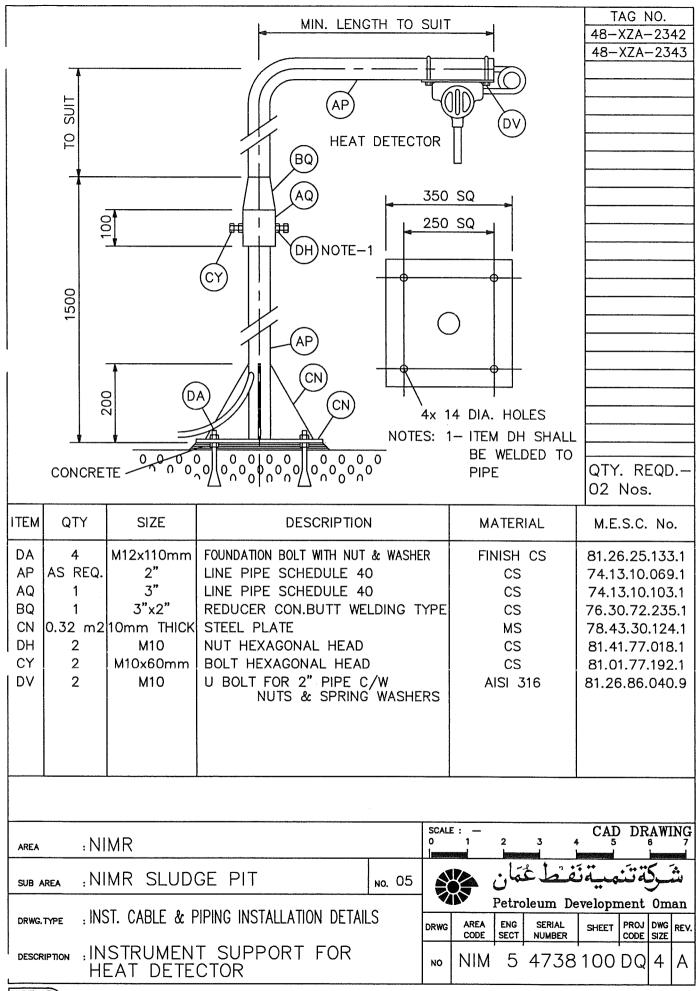
| R N<br>X<br>AA             | 0TE-1<br>1<br>2 | 19 ~ 6 mm<br>M20<br>M20         | CABLE SHRINK O<br>LOCK NUT<br>CABLE GLAND | N SLEEVE | (BLA     | ACK)         | 6           | LYOLEFIN<br>BRASS<br>BRASS | 68.80<br>68.80 | ).58.        | 068. | .9      |
|----------------------------|-----------------|---------------------------------|-------------------------------------------|----------|----------|--------------|-------------|----------------------------|----------------|--------------|------|---------|
| area : NIMR                |                 |                                 |                                           |          |          | E: —         | 2           | 3 4                        | CAD            | DR           | AWI  | NG<br>7 |
| SUB AREA : NIMR SLUDGE PIT |                 |                                 |                                           | NO. 05   |          |              |             | فنطغ                       | **             | نتت          | ز ک  | بد      |
| DRWG,TYPE                  | .EL             | ECTRICAL & PI                   | NEUMATIC HOOK-                            | -UPS     | <u> </u> |              |             | oleum De                   | <del>,</del>   |              |      |         |
|                            | •               |                                 |                                           |          | DRWG     | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER           | SHEET          | PROJ<br>CODE | SIZE | REV.    |
| DESCRIPTION                | -               | DOK—UP DE <sup>*</sup><br>OOTER | TAILS                                     |          | NO       | NIM          | . 5         | 4738                       | 046            | DQ           | 4    | Α       |

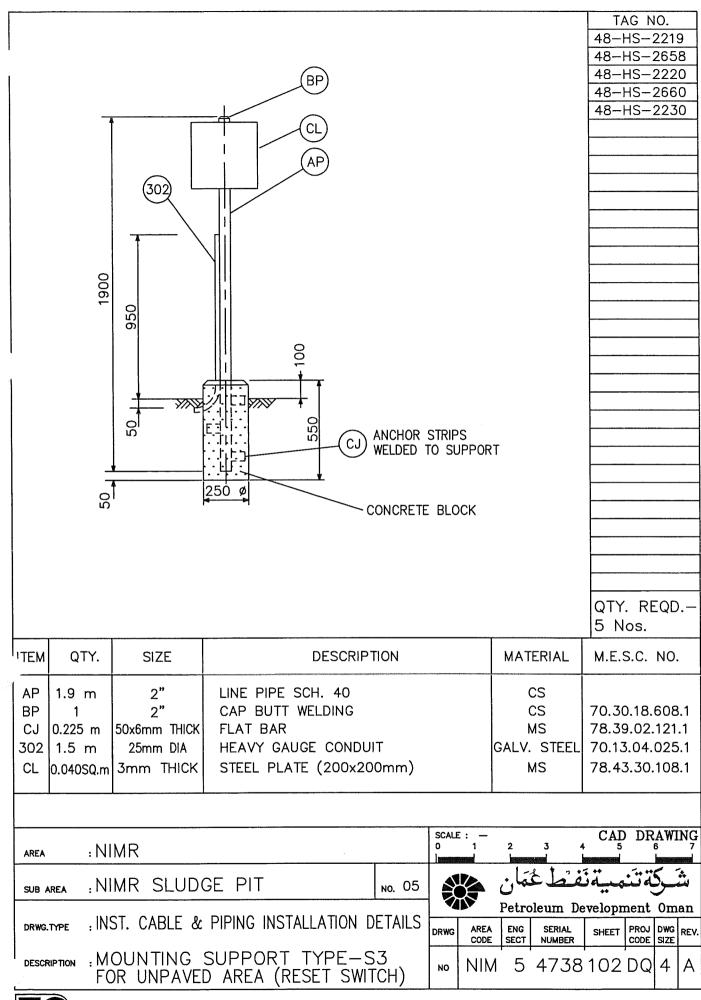


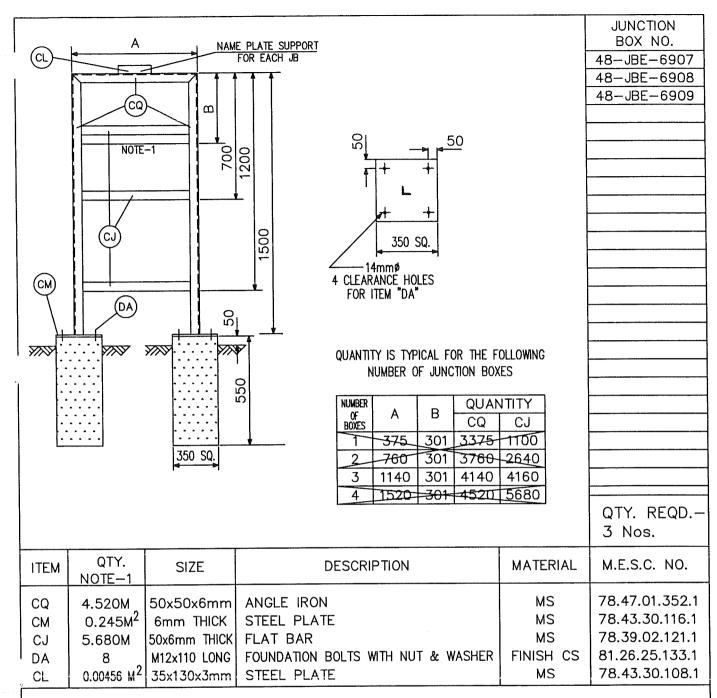












# NOTES:

- 1. FLAT BARS SHALL BE WELDED ADJACENT TO EACH OTHER.
- 2. PAINTING & COATING AS PER ERD PDO-48.01
- 3. FOR UNPAVED AREA USE CONCRTE SUPPORT, REFER STD-5-0801-031
- 4. REFER "CONCRETE BLOCK FOR SUPPORTS IN UNPAVED AREA" STD DRAWING IN SHEET 020

| AREA        | :NIMR                                          |        | SCALI<br>0 | E : —<br>1   | 2                    | 3 4              | CAD<br>5 | ) DR         | AWI | NG<br>7 |
|-------------|------------------------------------------------|--------|------------|--------------|----------------------|------------------|----------|--------------|-----|---------|
| SUB AREA    | :NIMR SLUDGE PIT                               | NO. 05 |            |              | <b>U</b>             | تفنطغ            | **       | •            | ترک | ث       |
| DRWG.TYPE   | INST. CABLE & PIPING INSTALLATION DETAI        | LS     | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER |          | PROJ<br>CODE | DWG |         |
| DESCRIPTION | JUNCTION BOX MOUNTING SUPPORT FOR UNPAVED AREA | •      | NO         | NIM          | 5                    | 4738             | 103      | DQ           | 4   | Α       |

# I.C.T.D.

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

# APPROVED FOR CONSTRUCTION

CAD DRAWING

| , LEV | DAIL    | BY    | CHE    | CKED   | DESOME HOR                | WDS NO.   | PDOA       | PPROVAL   |
|-------|---------|-------|--------|--------|---------------------------|-----------|------------|-----------|
| REV   | DATE    | DRAWN | TEAML. | J.ENG. | DESCRIPTION               | WBS No.   | PROJ. ENG. | SIGNATURE |
| 0     | DEC.'10 | NS    | PΤ     | KĐA    | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    | HI        |
| Α     | MAR.'11 | KK    | Ship   |        | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    | and       |
|       |         |       |        |        |                           |           |            |           |

# PROJECT DRAWING REVISION

| I   | CASE O   | F DEV | [ATIO] | NS A   | MARKED UP PRINT SHALL BE SENT T | O THE PI      | ROJECT E   | INGINEER  |
|-----|----------|-------|--------|--------|---------------------------------|---------------|------------|-----------|
| M   | 146A',08 | ASD   |        |        | AS BUILT UP TO NOV.'08          | OT.08.005     | 0S0/22N    | -SK       |
| L   | APR.05   | DOI   |        |        | AS BUILT FOR PROJECT '5X'       | 02,001        |            | BW        |
| (   | JAN.05   | DOI   |        |        | AS BUILT FOR PROJECT '3Y & X4'  | 00.394/95.052 |            | BW        |
| ا آ | DEC.04   |       |        |        | AS BUILT FOR PROJECT '5R'       | 01.116        | OSE/24N    |           |
| Н   | DEC.04   | DOI   |        |        | AS BUILT FOR PROJECT '5V'       | 02.002        |            | BW        |
| G   | JUNE.02  | MAX   |        |        | AS BUILT FOR PROJECT 7G         |               | QME/13     |           |
| 0   | 10/85    | GT    |        |        | ORIGINAL ISSUE                  |               | _          |           |
| RE  | / DATE   | DRAWN | TEAML. | J.ENG. | DESCRIPTION                     | B.I. NO       | PROJ. ENG. | SIGNATURE |
| KE  | I DAIR   | BY    | CHE    | CKED   | DESCRIP HON                     | B.I. NO       | PDOA       | APPROVAL  |

## MASTER DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

:NIMR AREA .PRODUCTION STION NO. 05 SUB AREA

.I.C.T.D. DRWG.TYPE

JUNCTION BOXES FRONT SHEET DESCRIPTION

Petroleum Development Oman SHEET PROJ DWG CODE SIZE AREA ENG SERIAL REV. DRWG NUMBER NIM 5 5043 001 DQ 4 NO



| SHEET<br>NO. | JUNCTION BOX DESCRIPTION      |             |                                                  |          |                                                  | DATE           | OF IS:            | SUE /            | REVIS                                            | ON LE  | TTER           |          |         |      |         |
|--------------|-------------------------------|-------------|--------------------------------------------------|----------|--------------------------------------------------|----------------|-------------------|------------------|--------------------------------------------------|--------|----------------|----------|---------|------|---------|
| ' & ^        | DESCRIP HON                   | 0           | Z                                                | Α        | В                                                | С              | Н                 | J                | К                                                | L      | М              | 0        | A       | В    | Ċ       |
| 001          | FRONT SHEET                   | 10/85       | 03/00                                            | 03/00    | 06/00                                            | 09/00          | DEC.04            | DEC.04           | JAN.05                                           | APR.05 | NOV.           | DEC.'10  | MAR.'11 |      | 1       |
| 002          | INDEX/ REV SHT                | 10/85       | 03/00                                            | 03/00    | 06/00                                            | 09/00          | DEC.04            | DEC.04           | JAN.05                                           | APR.05 | NOX.'O         | DEC.'10  | MAR.'11 |      |         |
| 003          | INDEX/ REV SHT                | 10/85       |                                                  |          |                                                  | 09/00          |                   |                  | JAN.05                                           |        |                | DEC.'10  | MAR.'11 |      |         |
| 004          | INDEX/ REV SHT                | 10/85       | Q3/00                                            | 03/00    |                                                  |                |                   |                  | JAN.05                                           | /      |                |          |         |      |         |
| 005          | INDEX/ REV SHT                | 10/95       |                                                  |          | 06/00                                            | 09/00          |                   |                  | JAN.05                                           | APR.Ø5 |                |          |         |      |         |
| 006          | INDEX/ REV SHT                | 05/86       | 03/00                                            | 03/00    | 06/00                                            | 09/00          | DEC.04            |                  | JAN.05                                           | APR.05 | NOV.'08        |          |         |      |         |
| 007          | INDEX/ REV SHT                |             |                                                  |          |                                                  |                |                   | <u> </u>         |                                                  | APR.05 |                |          |         |      |         |
| 008          | INDEX/ REV SHT                |             | <del>                                     </del> |          |                                                  | 09/00          |                   |                  |                                                  | APR.05 |                |          |         |      |         |
| 009          | INDEX/ REV SHT                |             |                                                  |          |                                                  | -              |                   | DEC.04           |                                                  |        | NOV.'08        |          |         |      |         |
| 010          | INDEX/ REV SHT                |             |                                                  | $\vdash$ | 06/00                                            |                | DEC.04            |                  | JAN.05                                           | APR.05 | NOV.'08        |          |         |      |         |
| 10A          | INDEX/ REV SHT                | 08/00       |                                                  |          | <u> </u>                                         |                | DELETED           | <u> </u>         | 1/-                                              |        |                |          |         |      |         |
| 011          | 48-JBE-11                     | 10/85       |                                                  |          |                                                  |                |                   |                  | /                                                |        | <u> </u>       | <u> </u> |         |      |         |
| 012          | 48-JBE-12                     | 10/85       |                                                  |          | $\overline{}$                                    | -              |                   | 7                | 1                                                |        |                |          |         |      |         |
| 013          | 48-JBE-13                     | 10/85       |                                                  |          | $\vdash$                                         |                |                   | <del>  /</del>   | <del>                                     </del> |        |                |          |         |      |         |
| 014          | 48-JBE-14                     | 10/85       |                                                  |          | $\vdash$                                         |                |                   | <del>  / -</del> | <del> </del>                                     |        |                |          |         |      |         |
| 015          | 48-JBE-15                     | 10/85       |                                                  |          | <del>                                     </del> |                |                   | /                | <u> </u>                                         |        |                | -        |         |      |         |
| 216          | 48-JBE-16                     | 10/85       |                                                  | <b></b>  | \<br> \                                          | <b>\</b>       | <del>- /</del>    | -                |                                                  |        |                |          |         |      |         |
| , 017        | 48-JBE-17                     | 10/85       |                                                  |          |                                                  | \              | <del>- /-</del>   |                  | <del> </del>                                     |        | <u> </u><br>   |          |         |      |         |
|              | 48-JBE-18                     | 10/85       |                                                  |          |                                                  | <del>-\-</del> | <del>- /-</del>   | <u> </u>         | <u> </u>                                         |        |                |          |         |      |         |
| 018          | 48-JBE-19                     | 10/85       |                                                  | <u> </u> |                                                  | <del>- \</del> | /                 | _                | <del> </del>                                     |        |                |          |         |      |         |
| 019          |                               | 1           |                                                  |          |                                                  | $ \rangle$     | <u> </u>          |                  | <u> </u>                                         | ļ      | <b></b>        | ļ        |         |      |         |
| 020          | 48-JBE-20                     | 10/85       |                                                  |          |                                                  | /              | <del>\</del>      |                  | <u> </u>                                         |        |                | <u> </u> |         |      |         |
| 021          | 48-JBE-21                     | 10/85       |                                                  |          |                                                  | _/_            | $\vdash$          |                  |                                                  |        |                |          |         |      |         |
| 022          | 48-JBE-22                     | 10/85       |                                                  |          |                                                  | /              | <del></del>       |                  | <u> </u>                                         |        |                | ļ        |         |      |         |
| 023          | 48-JBE-23                     | 10/85       |                                                  |          |                                                  | /              | $\longrightarrow$ | igspace          | <u> </u>                                         |        | ļ              | ļ        |         |      |         |
| 024          | 48-JBE-24                     | 10/85       |                                                  | ļ        | /                                                |                |                   | <b></b>          | <u> </u>                                         |        | <u> </u>       | <u> </u> |         |      |         |
| 025          | 48-JBE-25                     | 10/85       | 4                                                |          |                                                  |                |                   | <u> </u>         | ļ                                                |        |                |          |         |      |         |
| 026          | 48-JBE-26                     | 10/85       |                                                  |          | _/                                               |                |                   | 1                |                                                  |        |                |          |         |      |         |
| 027          | 48-JBE-27                     | 10/85       |                                                  |          | <u> </u> /                                       | 09/00          |                   |                  | JAN.05                                           |        |                |          |         |      |         |
| 028          | 48-JBE-28 (SPARE)             | 10/85       |                                                  | /        |                                                  |                |                   |                  | <u> </u>                                         |        |                |          |         |      |         |
| 029          | 48-JBE-29                     | 10/85       |                                                  |          |                                                  |                |                   |                  | 17—                                              |        |                |          |         |      |         |
| 030          | 48-JBE-30                     | 10/85       |                                                  |          |                                                  |                |                   |                  |                                                  |        |                |          |         |      |         |
| 031          | 48-JBE-31                     | 10/85       |                                                  | /        |                                                  |                |                   |                  | $oxed{oxed}$                                     |        |                |          |         |      |         |
| 032          | 48-JBE-32                     | 10/85       |                                                  |          |                                                  |                |                   |                  |                                                  | 1      |                |          |         |      |         |
| 33           | 48-JBE-33                     | 10/85       |                                                  |          |                                                  |                |                   |                  | JAN.05                                           |        |                |          |         |      |         |
| 034          | 48-JBE-34                     | 10/85       |                                                  |          |                                                  |                |                   |                  |                                                  |        |                | DEC.'10  | MAR.'11 |      |         |
| 035          | 48-JBE-35                     | 10/85       |                                                  |          |                                                  |                |                   |                  | JAN.05                                           |        |                |          |         |      |         |
| 036          | 48-JBE-36                     | 10/85       | /                                                |          |                                                  |                |                   |                  | JAN.05                                           |        |                |          |         |      |         |
| 037          | 48-JBE-37                     | 10/85       |                                                  |          |                                                  |                |                   |                  | JAN.05                                           |        |                |          |         |      |         |
| 038          | 48-JBE-38                     | 10/85       |                                                  |          |                                                  |                |                   |                  |                                                  |        |                |          |         |      |         |
| 039          | 48-JBE-39                     | 19/85       |                                                  |          |                                                  | <u> </u>       |                   |                  |                                                  |        |                |          |         |      |         |
| 040          | 48-JBE-40                     | 0/85        |                                                  |          |                                                  |                |                   |                  |                                                  |        | <del>  \</del> | J        |         |      |         |
|              |                               |             |                                                  | •        | •                                                | •              |                   |                  |                                                  |        | <u> </u>       | •        | <b></b> |      |         |
| AREA         | : NIMR                        |             |                                                  |          |                                                  |                | Ι                 | S(<br>0          | CALE: ·                                          | 2<br>  | 3              | 4        | 5<br>   | DRA  | WING    |
| SUB A        |                               | ON :        | STA                                              | TION     |                                                  |                | NO. C             | 5                |                                                  |        |                |          | relopm  | •    | man     |
| DRWG.        |                               |             |                                                  |          |                                                  |                |                   | DR               |                                                  | EA EN  | G SE           | RIAL     | SHEET   |      | WG REV. |
| DESCR        | JUNCTION : JUNCTION INDEX ANI | BO)<br>D Ri | X<br>EVIS                                        | ION      | SHE                                              | EET            | <del></del>       | N                | o N                                              | M 5    | 5 50           | )43(     | 002     | DQ 4 | ł A     |

| SHEET<br>NO. | 041 48-JBE-41 (VENDOR) 10/85    |          |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             |              |                |             |          |                                                  |
|--------------|---------------------------------|----------|-----------------------------------------|----------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------|---------------------------------------------------|-------------|-----------------------------------------------------------------------------|--------------|----------------|-------------|----------|--------------------------------------------------|
|              |                                 |          |                                         | D        | E                                                | F                                                | G                                                  | H*                                                | R           | S                                                                           | T            | 0              | Α           | В        | C                                                |
| 041          |                                 |          |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | /            | 1              |             |          |                                                  |
| 042          |                                 |          |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | 1/           |                |             |          |                                                  |
| 043          |                                 | 10/85    | $\perp$                                 |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | $\perp / \_$ |                |             |          |                                                  |
| 044          | SPARE                           |          |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | /            |                |             |          |                                                  |
| 045          | 48-JBE-45                       | 10/85    |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | 1            | DEC.'10        | MAR.'11     |          |                                                  |
| 046          | 48-JBE-46                       | 10/85    |                                         |          |                                                  |                                                  |                                                    | 12/0                                              | 4           |                                                                             | <u> </u>     |                |             |          |                                                  |
| 047          | 48-JBE-47                       | 10/85    |                                         |          |                                                  |                                                  |                                                    | 12/0                                              | 4           |                                                                             |              |                |             |          |                                                  |
| 048          | 48-JBE-48                       | 10/85    |                                         |          |                                                  |                                                  |                                                    | 12/0                                              | 4           | 10/9                                                                        | 7            |                |             |          |                                                  |
| 049          | SPARE                           | 10/85    |                                         |          |                                                  |                                                  |                                                    |                                                   |             | Y                                                                           |              |                |             |          |                                                  |
| 050          | 48-JBE-50                       | 10/85    |                                         |          | $\setminus$                                      |                                                  |                                                    |                                                   |             | 7                                                                           |              |                |             |          |                                                  |
| 051          | 48-JBE-51                       | 10/85    |                                         |          |                                                  |                                                  |                                                    |                                                   | 1           | /                                                                           |              |                |             |          |                                                  |
| 052          | 48-JBE-52                       | 10/85    |                                         |          |                                                  |                                                  |                                                    |                                                   | 17          |                                                                             |              | DEC.'10        | MAR.'11     |          |                                                  |
| 053          | 48-JBE-53                       | 10/85    |                                         |          |                                                  |                                                  |                                                    |                                                   | 1/          |                                                                             |              |                |             |          |                                                  |
| 054          | 48-JBE-54                       | 10/85    | *************************************** |          | <b>'</b>                                         | 1                                                |                                                    |                                                   | 1           |                                                                             |              |                |             |          |                                                  |
| 055          | 48-JBE-55                       | 10/85    |                                         |          |                                                  | $\setminus$                                      | !                                                  | 17                                                | +           |                                                                             |              |                |             |          | -                                                |
| 056          | 48-JBE-56                       | 10/85    |                                         |          | l                                                | $\vdash$                                         |                                                    | /                                                 | $\top$      |                                                                             |              |                |             |          |                                                  |
| 757          | 48-JBE-57                       | 10/85    |                                         |          |                                                  |                                                  |                                                    | <del>  /                                   </del> |             |                                                                             |              |                |             | -        | +                                                |
| , 058        | 48-JBE-58                       | 10/85    |                                         |          | <u> </u>                                         | $\vdash$                                         |                                                    | <del>/                                    </del>  | <del></del> |                                                                             | +            | <del> </del>   |             |          | +                                                |
| 059          | 48-JBE-59                       | 10/85    |                                         |          |                                                  |                                                  | /                                                  |                                                   |             |                                                                             |              |                |             |          | _                                                |
| 060          | 48-JBE-60                       | 10/85    |                                         |          |                                                  |                                                  | <del>  \/                                   </del> |                                                   | -           |                                                                             | _            | <del> </del> - | <u> </u>    |          | <del>                                     </del> |
| 061          | 48-JBE-61                       | 10/85    |                                         | <u> </u> |                                                  |                                                  | $+\lambda$                                         | ļ                                                 |             | 10/9                                                                        | 7            | <u> </u>       |             |          | +                                                |
| 062          | 48-JBE-62                       | 10/85    |                                         |          |                                                  |                                                  | $\bigvee \setminus$                                |                                                   | -           | 1073                                                                        | <del>-</del> |                | <del></del> |          |                                                  |
| 063          | 48-JBE-63                       | 10/85    |                                         |          |                                                  | <del>                                     </del> |                                                    | $ar{}$                                            |             |                                                                             |              |                | }           |          | +                                                |
| 064          | 48-JBE-64                       | 10/85    |                                         |          |                                                  | <del>                                     </del> | <u> </u>                                           | $\vdash$                                          | -           |                                                                             |              | 1              |             |          | -                                                |
|              |                                 | 10/85    |                                         |          |                                                  | <del>  /-</del>                                  |                                                    | $\vdash \vdash$                                   |             |                                                                             | _            | <u></u>        |             |          | +                                                |
| 065          | 48-JBE-65<br>48-JBE-66          | 10/85    |                                         |          |                                                  | /                                                |                                                    | $\vdash \setminus$                                |             | <del>-</del>                                                                |              |                |             |          | -                                                |
| 066          | 48-JBE-67                       |          |                                         |          | ļ                                                | <del>/                                    </del> |                                                    | <del></del>                                       | \-          |                                                                             |              |                |             | <u> </u> | -                                                |
| 067          | ļ                               | 10/85    |                                         | <u> </u> | <del>                                     </del> | <u> </u>                                         |                                                    |                                                   | +           |                                                                             | 40.707       |                | ļ           | <u> </u> |                                                  |
| 068          | 48-JBE-68                       | 10/85    |                                         |          | <del>  /-</del>                                  | ļ                                                |                                                    | ļ                                                 | +           |                                                                             | 10/97        |                | <u> </u>    | <u> </u> |                                                  |
| 069          | 48-JBE-69                       | 10/85    |                                         |          | <del>  /</del>                                   |                                                  | ļ                                                  | 1                                                 | +           | <del></del>                                                                 | 10/97        |                | ļ           | ļ        |                                                  |
| 070          | 48-JBE-70                       | 10/85    |                                         |          | V                                                |                                                  |                                                    | ļ                                                 | _           | $\longrightarrow$                                                           | _            | <u> </u>       | <u> </u>    |          | -                                                |
| 071          | 48-JBE-71                       | 10/85    |                                         | /        | 1                                                | -                                                |                                                    |                                                   | +           | <del>\</del>                                                                | _            | ļ              | ļ           |          |                                                  |
| 072          | 48-BSP-001 (VENDOR)             | <u> </u> |                                         | _/       |                                                  |                                                  |                                                    | <u> </u>                                          |             | $-\Lambda$                                                                  |              |                | ļ           | <u> </u> | _                                                |
| 073          | 48-BSP-002 (VENDOR)             |          |                                         | _/_      |                                                  |                                                  |                                                    | <u> </u>                                          |             | $-\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!\!$ |              | <u> </u>       |             |          |                                                  |
| )74          | 48-BSP-003 (VENDOR)             | 10/85    |                                         | /        |                                                  |                                                  |                                                    |                                                   |             | $\rightarrow$                                                               | ļ            | ļ              |             |          |                                                  |
| 075          | SPARE                           |          | Ĺ,                                      | <u> </u> |                                                  |                                                  |                                                    | <u> </u>                                          |             |                                                                             | \            |                |             |          |                                                  |
| 076          | SPARE                           |          |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | _\           |                |             |          |                                                  |
| 077          | SPARE                           |          |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             | $\perp$      |                |             |          |                                                  |
| 078          | SPARE                           |          |                                         |          |                                                  |                                                  |                                                    | <u> </u>                                          |             |                                                                             |              |                | <u> </u>    |          |                                                  |
| 079          | SPARE                           |          | <u>/</u>                                |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             |              |                |             |          |                                                  |
| 080          | 48-JBE-80                       | 10/85    |                                         |          |                                                  |                                                  |                                                    |                                                   |             |                                                                             |              |                |             |          |                                                  |
| *            | LATEST REVISION IS 'H'          | DEC.     | 04                                      | ·        |                                                  |                                                  |                                                    |                                                   |             |                                                                             |              |                |             |          |                                                  |
| AREA         | : NIMR                          |          |                                         |          |                                                  |                                                  | ı                                                  |                                                   | SCALE<br>)  | 1 :                                                                         | 2 3          | 4              | 5           |          | AWING                                            |
| SUB A        | area :PRODUCTIO                 | NC:      | STA                                     | TION     |                                                  |                                                  | NO. C                                              | )5                                                |             | 7                                                                           | لگمار        |                | **          | `        |                                                  |
| DRWG.        | TYPE : I.C.T.D.                 |          |                                         |          |                                                  |                                                  |                                                    | D                                                 | RWG         | AREA I                                                                      |              | m Dev          |             |          | Oman<br>DWG REV.                                 |
| DESCR        | RIPTION : JUNCTION<br>INDEX ANI |          |                                         | ION      | SHF                                              | EET                                              |                                                    |                                                   | NO          | NIM                                                                         | 1            |                |             |          |                                                  |
|              |                                 |          |                                         |          |                                                  |                                                  |                                                    | L                                                 |             | ***************************************                                     |              |                |             | 1        | <u> l</u>                                        |

| TAG             | EQUIPME |      | EXT. CABLE No.&SIZE | CORE  | TERMINAL   | MULTICORE CABLE No. TYPE | CORE |
|-----------------|---------|------|---------------------|-------|------------|--------------------------|------|
| NUMBER<br>  48- | CONNECT | TION | TYPE                | COILL | ILINIIINAL | SIZE<br>CONNECTED TO     | CORE |
| PDZA-212        | P 4817  | 7    | 48-E-412, 1x4x1.2   | R & B | 1          | 48-E-124                 | 1 R  |
| T DZA ZIZ       | 1 7017  | ,    | 10 1 112, 14 141.2  | W & O | 2          | PVCI-MS-SWA-PVCS         | 1 B  |
| HS-028          |         |      | 48-E-413, 1x4x1.2   | R & B | , <b>3</b> | 5x4x0.8<br>SDE-002       | 1 W  |
| 110 020         |         |      |                     | W & O | 4          | STRIP A181-200           | 1 ø  |
| PZA-106         |         |      | 48-E-414, 1x4x1.2   | R & B | 5          |                          | 2 R  |
| 12/100          |         |      | 70 1 177, 1272      | W & O | 6          |                          | 2 B  |
| PZA-105         |         |      | 48-E-415, 1x4x1.2   | R & B | 7          |                          | 2 W  |
| 1 2A 100        |         |      | 40 E 410, 1A4X1.2   | W & O | 8          |                          | 2 ø  |
| PZA-107         |         |      | 48-E-416, 1x4x1.2   | R & B | 9          |                          | 3 R  |
| 124 107         |         |      | 10 2 410, 12121.2   | W & O | 10         |                          | 3 B  |
| SPARE           |         |      |                     |       | 11         |                          | 3 W  |
| SI AIL          |         |      |                     |       | 12         |                          | 3 ø  |
| PDIZA-1523      | +       |      | E-2736 2x2x1.13mm   | BK+B  | 13         |                          | 4 R  |
| DIZA 1525       | -       |      | XLPEI-MS-SWA-PVCS   | G+BN  | 14         |                          | 4 B  |
| SPARE           |         |      |                     |       | 15         |                          | 4 8  |
|                 |         |      |                     |       | 16         |                          | 4 ø  |
| ,               |         |      |                     | !     | 17         |                          | 5 R  |
|                 |         |      |                     |       | 18         |                          | 5 B  |
|                 |         |      | -                   |       | 19         |                          | 5 W  |
|                 |         |      |                     |       | 20         |                          | 5 ø  |

NOTE: SCREENS CONNECTED TO AN ISOLATED EARTH BAR

| AREA        | :NIMR                          |        | SCALI<br>0 | 1            | 2                    | 3 4              | CAD | ) DR         | AWI  | NG<br>7 |
|-------------|--------------------------------|--------|------------|--------------|----------------------|------------------|-----|--------------|------|---------|
| SUB AREA    | PRODUCTION STATION             | NO. 05 |            |              | مَان                 | فنطغ             | مية | نتت          | ئىرك | F. \$1  |
| DRWG.TYPE   | INST. CABLE TERMINATION DETAIL | .S     | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER | T   | PROJ<br>CODE | DWG  |         |
| DESCRIPTION | :48-JBE-34                     |        | NO         | NIM          | 5                    | 5043             | 034 | DQ           | 4    | Α       |

|              |                | EXT. CABLE No.&SIZE                       |         |                                                  |           | MULTICORE  | CAE            | 3LE N  | o.       |            |
|--------------|----------------|-------------------------------------------|---------|--------------------------------------------------|-----------|------------|----------------|--------|----------|------------|
| TAG          | EQUIPMENT      | EXT. ONDEE HOLGSIZE                       | CORE    | TERMIN                                           | JAI L     |            | YPE            |        |          | CORE       |
| NUMBER       | CONNECTION     | TYPE                                      |         | 1 = 1 (101)                                      | " · · L   | S          | IZE            |        |          | COIL       |
|              |                |                                           |         |                                                  |           | CONNE      | CTED           | TO     |          |            |
| GBS-791(0)   | F-4803         | 48-E-519, 1x4x1.2                         | R       | 1                                                |           |            | E-135          |        |          | 1 R        |
|              |                |                                           | В       | 2                                                |           | PVCI-MS-   | -SWA-<br>4x0.8 | -PVCS  | L        | 1 B        |
| GBS-791(C)   | F-4803         | 48-E-519, 1x4x1.2                         | W       | 3                                                |           |            | -002           |        |          | 1 W        |
|              |                | 48-E-520, 1x4x1.2                         | ø<br>R  | 5                                                |           | STRIP A    | ,001-          | 040    | -        | 1 ø        |
| GBS-792(0)   | F-4803         | +0-L-520, 1X+X1.2                         | В       | 6                                                | —         |            |                |        |          | 2 R<br>2 B |
| 000 700(0)   |                | 48-E-520, 1x4x1.2                         | w       | 7                                                |           |            |                |        | ŀ        | 2 W        |
| GBS-792(C)   | F-4803         | ,                                         | ø       | 8                                                |           |            |                |        |          | 2 ø        |
| PZA-084      | F-4803         | 48-E-505, 1x4x1.2                         | R & B   | 9                                                |           |            | ŀ              |        |          | 3 R        |
| 124 004      | 1,-4000        |                                           | W &c ø  | <del> </del>                                     |           |            |                |        |          | 3 B        |
| PZA-086      | F-4803         | 48-E-506, 1x4x1.2                         | R & B   |                                                  |           |            |                |        |          | 3 W        |
|              |                |                                           | W & ø   | <del></del>                                      |           |            | ŀ              |        | L        | 3 ø        |
| SPARE        | F-4803         |                                           |         | 13                                               |           |            |                |        |          | 4 R        |
|              |                |                                           |         | 14<br>15                                         |           |            |                |        | -        | 4 B        |
| SPARE        | F-4803         |                                           |         | 16                                               |           |            |                |        | -        | 4 W<br>4 ø |
|              |                |                                           |         | 17                                               |           |            |                |        | <u> </u> | 5 R        |
| SPARE        | F-4803         |                                           |         | 18                                               |           |            |                |        |          | 5 B        |
| CDARE        | E 4907         |                                           |         | 19                                               |           |            |                |        | l        | 5 W        |
| SPARE        | F-4803         |                                           |         | 20                                               |           |            |                |        |          | 5 ø        |
| PZA-072      | F-4803         | 48-E-516, 1x4x1.2                         | R & B   |                                                  |           |            | ŀ              |        |          | 6 R        |
|              |                |                                           | W & ø   | · <b> </b> · · · · · · · · · · · · · · · · · · · |           |            |                |        | _        | 6 B        |
| GBS-794(0)   | F-4803         | 48-E-514, 1x4x1.2                         | R       | 23                                               |           |            |                |        |          | 6 W        |
|              |                | 48-E-514, 1x4x1.2                         | B<br>W  | 24<br>25                                         |           |            | -              |        | -<br> -  | 6 ø        |
| GBS-794(C)   | F-4803         | 40-E-514, 1X4X1.2                         | ø       | 26                                               |           |            |                |        |          | 7 R<br>7 B |
|              |                | 48-E-515, 1x4x1.2                         | R       | 27                                               |           |            |                |        | -        | 7 W        |
| GBS-793(0)   | F-4803         |                                           | В       | 28                                               |           |            |                |        |          | 7 ø        |
| GBS-793(C)   | F-4803         | 48-E-515, 1x4x1.2                         | W       | 29                                               |           |            |                |        |          | 8 R        |
| 003 733(0)   | 1-4003         |                                           | ø       | 30                                               |           |            |                |        |          | 8 B        |
| SPARE        |                |                                           |         | 31                                               |           |            |                |        |          | 8 W        |
|              |                |                                           |         | 32                                               |           |            | <b>—</b>       |        |          | 8 0        |
| GBS-2660 (0) |                | 40 5 0777 0 0 4 4 7                       | BK<br>G | 33                                               |           |            |                |        |          | 9 R ;      |
|              | T-4807         | 48-E-2737 2x2x1.13mm<br>XLPEI-MS-SWA-PVCS | В       | 35                                               |           |            |                |        | -        | 9 B ;      |
| GBS-2660 (C) |                | ALI LI-M3-311A-1 V03                      | BN      | 36                                               |           |            |                |        |          | 9 ø        |
| 110 0070     |                | 48-E-2738 2x2x1.13mm                      | BK+B    | 37                                               |           |            |                |        | -        | 10 R       |
| HS-2230      | T-4807         | XLPEI-MS-SWA-PVCS                         | G+BN    | 38                                               |           |            |                |        |          | 10 B       |
| SPARE        |                |                                           |         | 39                                               |           |            | 1              |        |          | 10 W       |
| J. AILL      |                |                                           | <u></u> | 40                                               |           | ·          | +              |        |          | 10 ø       |
| NOTE: S      | SCREENS CONNEC | TED TO AN ISOLATED EARTH                  | BAR     |                                                  |           |            |                |        |          |            |
|              |                |                                           |         |                                                  |           |            |                |        |          |            |
|              |                |                                           |         | s                                                | SCALE : - |            |                | CAD    | DR       | AWING      |
| AREA         | :NIMR          |                                           |         | l C                                              | ) 1       | 2 3        | 4<br>L         | 5      | (        | 5 7        |
|              |                | TON CTATION                               |         |                                                  | ad Da     | 1-2        | 7 27           | مبة    | • ** **( | <u> </u>   |
| SUB AREA     | .PRODUCT       | TON STATION                               | N       | 10. 05                                           |           | ر نسر      |                | هجنه ر | به ب     | سور        |
|              | INCT CAR       |                                           | шС      |                                                  | AN        | Petroleu   | m De           | velopn | nent     | 0man       |
| DRWG.TYPE    | IN21. CABL     | E TERMINATION DETA                        | ILS     | DI                                               |           |            | RIAL           | SHEET  | PROJ     | DWG REV.   |
|              | 10 IDE         | 45                                        |         | -                                                | CC        | DE SECT NU | MBER           |        | CODE     | SIZE       |
| DESCRIPTION  | :48-JBE-       | 40                                        |         | 1                                                | NO N      | IM 5 50    | )43            | 045    | DQ       | 4 A        |
|              |                |                                           |         |                                                  |           |            |                |        |          |            |

|          |            | EXT. CABLE No.&SIZE   |      |           | MULTICORE CABLE No. |      |
|----------|------------|-----------------------|------|-----------|---------------------|------|
| TAG      | EQUIPMENT  | EXI. CADLE NO. & SIZE | CODE | TEDMANIAL | TYPE                |      |
| NUMBER   | CONNECTION | TVDE                  | CORE | TERMINAL  | SIZE                | CORE |
|          |            | TYPE                  |      |           | CONNECTED TO        |      |
| 117 704  | F 4907     | 48-E-556, 2×2.5       | 1BK  | 1         | 48-E-142            | 1    |
| UZ794    | F 4803     | 46-E-336, 2x2.3       | 2B   | 2         | PVCI-SWA-PVCS       | 2    |
| υz793    | F 4803     | 48-E-557, 2x2.5       | 1BK  | 3         | 21x2.5<br>SDE-002   | 3    |
| 02-733   | 1 4005     | 10 2 007, 2x2.0       | 2B   | 4         | STRIP-A-381-100     | 4    |
| UZ-792   | F 4803     | 48-E-558, 2×2.5       | 1BK  | 5         |                     | 5    |
|          |            |                       | 2B   | 6         |                     | 6    |
| UZ791    | F 4803     | 48-E-559, 2×2.5       | 1BK  | 7         |                     | 7    |
|          |            | ·                     | 2B   | 8         |                     | 8    |
| UZ-797   | F 4803     | 48-E-529, 2×2.5       | 1BK  | 9         |                     | 9    |
|          |            |                       | 2B   | 10        |                     | 10   |
| PICA-083 | F 4803     | 48-E-561, 2x2.5       | 1BK  | 11        |                     | 11   |
| (SOV)    |            |                       | 2B   | 12        |                     | 12   |
| SPARE    |            |                       |      | 13        |                     | 13   |
|          |            | 48-E-2735 2x2.5Sq.mm  | 1    | 15        |                     | 15   |
| UZV-2660 | T-4807     | XLPEI-SWA-PVCS        | 2    | 16        | 1                   | 16   |
|          |            |                       |      | 17        |                     |      |
| SPARE    |            |                       |      | 18        | 1                   | 18   |
|          |            |                       |      | 19        | 1                   | 19   |
| SPARE    |            |                       |      | 20        | 1 ∤                 | 20   |

NOTE: SCREENS CONNECTED TO AN ISOLATED EARTH BAR

| AREA        | : NIMR                          |        | SCALI<br>0 | 1            | 2                    | 3 4              | CAD | ) DR | AWI | NG<br>7 |
|-------------|---------------------------------|--------|------------|--------------|----------------------|------------------|-----|------|-----|---------|
| SUB AREA    | PRODUCTION STATION              | NO. 05 |            |              | مَان                 | فنطئ             | مية | نتظ  | 5   | *       |
| DRWG.TYPE   | INST. CABLE TERMINATION DETAILS |        | DRWG       | AREA<br>CODE | Petro<br>ENG<br>SECT | SERIAL<br>NUMBER | T   | PROJ |     |         |
| DESCRIPTION | :48-JBE-52                      |        | NO         | NIM          | 5                    | 5043             | 052 | DQ   | 4   | Α       |

# LIST OF ALARM AND TRIP SETTINGS

- 1. ALL SET POINTS ARE CONVERTED INTO COUNTS IN TRICONEX PLC SYSTEM. FOR ANALOG INPUT 0-20mA = 0-4095 COUNTS (4mA = 819 COUNTS). THIS APPLIES TO DIRECT AND REVERSE SIGNALS.
- 2. ALL RTD INPUTS ARE 0-600 DEG.C RANGE. 1 DEG.C = 6.825 COUNTS.

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

> APPROVED FOR CONSTRUCTION

|          |                                               | MAR.'11 KK Ship APPROVED FOR CONSTRUC |         |        |          |                                         |             |                    |          |              | 1           | - 1     |            | 1 7                                         | \        | $\neg$   |
|----------|-----------------------------------------------|---------------------------------------|---------|--------|----------|-----------------------------------------|-------------|--------------------|----------|--------------|-------------|---------|------------|---------------------------------------------|----------|----------|
| Α        | MAR.'11                                       | KK                                    | HWZ     | W.     | AF       | PPROVED FO                              | OR CONSTRUC | CTION              |          |              | IN.0        | 9.011   | OSE/23N    | 7                                           | T        | 77       |
| 0        | DEC'10                                        | Mrp                                   | PT      | KDA    | IS       | SUED FOR                                | COMMENTS    |                    |          |              | IN.O        | 9.011   | OSE/23N    |                                             | 1H       | ~\       |
| REV      | DATE                                          | DRAWN                                 | TEAML.  | J.ENG. |          |                                         | DESCR       | IPTION             |          |              | we          | s No.   | PROJ. ENG. | SI                                          | GNATU    | )RE      |
|          |                                               | BY                                    | CHE     | CKED   | <u> </u> |                                         | DESON       | 11014              |          |              | , ,,,,      | 3 NO.   | P D O      | APPRO                                       | OVAL     |          |
|          |                                               |                                       |         |        |          |                                         | JECT DRAV   |                    |          | •            |             |         |            |                                             |          |          |
| IN       | CASE 0                                        | F DEV                                 | IATIO   | NS A   | M        | ARKED U                                 | JP PRINT    |                    |          |              |             |         |            |                                             | INE      | ER       |
|          |                                               |                                       | ······  |        |          | MOV.'08                                 | ASD         | AS BUILT U         |          |              |             |         | )SO/22I    |                                             | SK       |          |
|          |                                               |                                       |         |        | F        | APR'05                                  |             | AS BUILT I         |          |              |             | 2.001   |            | ВМ                                          |          |          |
| <u> </u> |                                               |                                       |         |        | Ε        | JAN.05                                  |             | AS BUILT I         |          |              |             | 394     |            |                                             | BW       |          |
|          |                                               | ******                                |         |        | D        | NOV'04                                  |             | AS-BUILT           |          |              | <del></del> |         | DSE/241    | -                                           | <i>a</i> |          |
|          | ······································        |                                       |         |        | С        | MAR'02                                  |             | AS BUILT FO        |          |              |             |         | OME/41     | —                                           | AMA      | ,L       |
|          |                                               |                                       |         |        | Α        | JUN'01                                  |             | AS BUILT FO        |          |              |             |         | ONE/22     |                                             |          |          |
|          | W2-424-D1                                     |                                       |         |        | Z        | JULY'00                                 |             | AS BUILT FOR P     |          |              | Z 0         | 0.826   | ONE/2      | 3                                           |          |          |
|          | ***************************************       |                                       |         |        | <u>0</u> | 23.1.86                                 |             | ORIGINAL ISSUE / L | SSUE FOR | CONSTRUCTION |             |         |            |                                             | <u> </u> |          |
| REFI     | ERENCE TO EC                                  | UIPMENT/T                             | AG NUME | BERS   | REV      | DATE                                    | APPROVED    | DES                | CRIPTIO  | N            | l B         | I.NO.   | PROJ.ENG.  | SI                                          | PEC.EN   | 1G.      |
| <u> </u> | ·                                             |                                       |         |        |          |                                         | BY          |                    |          |              |             |         | PDO A      | PPRO                                        | /AL      |          |
| l .      | TES/REF                                       |                                       |         |        |          |                                         |             | MASTER I           |          |              |             |         |            |                                             |          | l        |
| IN       | CASE C                                        | F DEV                                 | OITAI   | NS M   | IAF      | KED UP                                  | PRINT SI    | HALL BE            | SEN      | TC TC        | CO          | ASTAL   | DESIG      | N 0                                         | FFI(     | CE       |
|          |                                               | NII AD                                |         |        |          |                                         |             |                    | SCALI    | E:           |             | 3       | CAD        | DR                                          | AWI      | NG       |
| ARI      | <u>:</u>                                      | NIMR                                  |         |        |          | *************************************** |             |                    |          |              | 2<br>       | 3       | 4 5        | •                                           |          |          |
|          |                                               |                                       |         | LIUNI  | C        | OITAT                                   | .T          | 0.5                | 4        | IZA.         | بَهَا ٠     | رُما عُ | 0 4 9      | ****                                        | <u> </u> | *        |
| SUI      | B AREA :                                      | FIVUL                                 |         |        |          | HIOI                                    | V           | но. 05             |          |              | U **        |         | ++<br>     | /<br>// // // // // // // // // // // // // |          |          |
|          | LIST OF ALARM AND                             |                                       |         |        |          |                                         |             |                    |          |              | Petro       | leum I  | evelopm    | ent                                         | 0m       | an       |
| DRI      | DRWG.TYPE : LIST OF ALARM AND : TRIP SETTINGS |                                       |         |        |          |                                         |             |                    | DRWG     | AREA         | ENG         | SERIAL  | SHEET      | PROJ                                        | DWG      | REV.     |
|          |                                               |                                       |         |        |          |                                         |             |                    |          | CODE         | SECT        | NUMBER  | -          | CODE                                        | SIZE     | $\dashv$ |
| I DES    | SCRIPTION :                                   | COVE                                  | л 5     |        | . 1      |                                         |             |                    | NO       | NIM          | 5           | 5065    | 5 001      | DQ                                          | 4        | Α        |
|          |                                               |                                       |         |        |          |                                         |             |                    |          |              |             |         |            |                                             | - 1      | - 1      |

| DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SHEET     | REV D                                            | REV E                                             | REV F                                            | REV                                              | RE         | V 0                                     | REV                                              | Α                | REV E          | REV                                              | С   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------|---------------------------------------------------|--------------------------------------------------|--------------------------------------------------|------------|-----------------------------------------|--------------------------------------------------|------------------|----------------|--------------------------------------------------|-----|
| COVER SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 001       | DEC,'04                                          | JAN.05                                            | APR'05                                           | NOV. ØE                                          | DEC        | :.'10                                   | MAR.                                             | '11              |                |                                                  |     |
| REVISION / INDEX SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 002       |                                                  |                                                   |                                                  | NOV/08                                           |            | .'10                                    | MAR.                                             |                  |                |                                                  | _   |
| REVISION / INDEX SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 003       | I                                                |                                                   |                                                  | NOX.'08                                          |            |                                         |                                                  | وي الكربي الكربي |                |                                                  |     |
| REVISION / INDEX SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 004       | 1                                                | ₩                                                 |                                                  | //                                               | DEC        | :.'10                                   | MAR.                                             | .'11             | ~~~            |                                                  | ~   |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 005       |                                                  |                                                   |                                                  | //                                               |            |                                         |                                                  |                  |                |                                                  |     |
| MISCELLANEOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 006       |                                                  |                                                   |                                                  | /                                                | 1          |                                         |                                                  |                  |                |                                                  |     |
| MISCELLANEOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 007       | <u> </u>                                         |                                                   |                                                  | 1                                                |            |                                         |                                                  |                  |                |                                                  |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 008       |                                                  | 1                                                 | 1 /                                              |                                                  |            |                                         |                                                  |                  |                |                                                  | _   |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 009       |                                                  |                                                   | <del>                                     </del> |                                                  |            |                                         |                                                  |                  |                | 1                                                |     |
| MISCELLANEOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 010       |                                                  | $\neg \land \neg$                                 | <del>                                     </del> |                                                  | _          |                                         |                                                  |                  |                |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 011       |                                                  |                                                   | 1/                                               |                                                  |            |                                         |                                                  |                  |                |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 012       |                                                  |                                                   | 1/                                               |                                                  | _          |                                         |                                                  |                  |                |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 013       | -                                                |                                                   | 1/                                               |                                                  |            |                                         |                                                  |                  |                | <del>                                     </del> |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 014       |                                                  | <del>                                      </del> | <del>/</del>                                     |                                                  |            |                                         |                                                  |                  |                | <del>                                     </del> |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 015       |                                                  | <del>                                     </del>  | /                                                | <del> </del>                                     | 1          |                                         | <del>                                     </del> |                  |                | +                                                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 016       | <b>†</b>                                         | <del>                                     </del>  | $\langle   $                                     | <del>                                     </del> | 1          |                                         |                                                  |                  | <u> </u>       | +                                                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 017       |                                                  |                                                   | APR'05                                           |                                                  |            |                                         | <b> </b>                                         |                  | <b> </b>       | +                                                |     |
| <b>I</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 018       | <del>                                     </del> | <del>- -/</del> -                                 | 1\                                               | <del> </del>                                     | _          |                                         | <del> </del>                                     |                  | <u> </u>       | -                                                |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 019       |                                                  | <del>/-</del>                                     | +                                                |                                                  |            |                                         | <u> </u>                                         |                  | <u> </u>       |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 020       |                                                  | <del></del>                                       | APR'05                                           |                                                  |            |                                         |                                                  |                  |                | +                                                |     |
| MISCELLANEOUS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 021       | <u> </u>                                         | JAN.05                                            |                                                  | NOV.'08                                          | -          |                                         |                                                  |                  |                | +                                                |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 022       |                                                  | <del>- /</del>                                    | + \                                              | 1101.00                                          |            |                                         | <del>                                     </del> |                  | <del> </del>   | +                                                |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 023       |                                                  | <del>-/</del>                                     | APR'05                                           |                                                  | +          | *************************************** |                                                  |                  | <b></b>        |                                                  |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 024       |                                                  | <del>/ </del> -                                   | 1,11,109                                         |                                                  | -          |                                         |                                                  |                  |                |                                                  |     |
| ANALYTICAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 025       | <del>                                     </del> | <del>/- </del> -                                  |                                                  | <del>\                                    </del> |            |                                         |                                                  |                  |                |                                                  |     |
| T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 026       | <del>                                     </del> |                                                   |                                                  | <del>                                     </del> |            |                                         |                                                  | <del></del>      |                |                                                  |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 028       | <del>                                     </del> |                                                   |                                                  | <del>                                     </del> |            |                                         | <u> </u>                                         |                  |                |                                                  |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 027       | <del>                                     </del> |                                                   |                                                  | + -                                              |            |                                         |                                                  |                  |                |                                                  |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 029       | <del>                                     </del> |                                                   |                                                  | <del>                                     </del> |            |                                         |                                                  |                  |                | -                                                |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 030       | <del>  /</del>                                   |                                                   | 1                                                | <del></del>                                      | -          |                                         |                                                  |                  |                |                                                  |     |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 031       | <del>  /</del>                                   |                                                   |                                                  | <del>                                     </del> | -          |                                         |                                                  |                  |                |                                                  |     |
| FLOW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 032       | <del> /</del>                                    | JAN.05                                            |                                                  | · ·                                              | $\forall$  |                                         |                                                  |                  |                | +                                                |     |
| I LOW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 002       | <u>V</u>                                         | 7 37 111.00                                       |                                                  | <u> </u>                                         | <u> </u>   |                                         | <u> </u>                                         |                  | 1              |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Gh        | 180'.VO                                          | ASD                                               | AS BUILT U                                       | D TO NO                                          | /'ng       | ΩΤ Ω                                    | 9 005                                            | loc.             | 0/2 <u>2</u> N |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | APR'05                                           | A3D                                               | AS BUILT FO                                      |                                                  |            |                                         |                                                  | 03               | 0/2414         |                                                  |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | JAN.05                                           |                                                   | AS BUILT F                                       |                                                  |            | 02                                      |                                                  |                  |                | BW                                               |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | 10V'04                                           |                                                   | AS BUILT F                                       |                                                  |            |                                         | 394                                              | 00               | E/24N          | BW                                               |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | AN: 87                                           |                                                   | ORIGINAL                                         |                                                  |            |                                         | 1.710                                            | 103              | E/24N          |                                                  |     |
| e annual Maria de Artes de Artes de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de La companya de | 1012      | AN. 07                                           |                                                   | ORIGINAL                                         | 1550                                             | -          |                                         |                                                  |                  |                | 0050 5                                           | _   |
| REFERENCE TO EQUIPMENT/TAG NUMBER: ARE TO BE PREFIXED BY AREA CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | S REV     | DATE                                             | APPROVED<br>BY                                    | DES                                              | CRIPTION                                         |            | B.I.                                    | NO.                                              | PF               | ROJ.ENG.       | SPEC.EN                                          | IG. |
| NOTES (DEEDENOE DEAVIN)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |                                                  |                                                   | 14 OTER                                          | DD 41401                                         |            |                                         | ~                                                |                  | PDO API        | ROVAL                                            |     |
| NOTES/REFERENCE DRAWIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           | TD 11D                                           |                                                   | MASTER                                           |                                                  |            |                                         |                                                  |                  |                |                                                  | ~-  |
| IN CASE OF DEVIATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | S MARK    | ED OP                                            | PRINT SI                                          | HATT RE                                          | <del></del>                                      |            | COA                                     | ASTA                                             | ע ט              | ESIGN          |                                                  |     |
| NIMD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |                                                  |                                                   |                                                  | SCALE :                                          |            | 2                                       | 3                                                | 4                | CAD :          | DRAWI                                            | NG  |
| area : NIMR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |                                                  |                                                   |                                                  | l lease and                                      | <u> </u>   | Ì                                       | <u> </u>                                         |                  |                | <u> </u>                                         |     |
| DDODUCTIO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | או כי     | - V ⊥!∪ri                                        |                                                   | 25                                               |                                                  | <b>.</b> • | Lice                                    | المان                                            | 1                | 4              | 175                                              |     |
| SUB AREA : PRODUCTIO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | וס מוכ    | AHUN                                             |                                                   | но. 05                                           |                                                  |            | الم                                     |                                                  |                  | ++             |                                                  |     |
| LIST OF A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | IARM      | AND                                              |                                                   |                                                  |                                                  | P          | etrol                                   | eum                                              | Dev              | elopme         | nt 0m                                            | an  |
| DRWG.TYPE : TRIP SETT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | INGS      | / (IND                                           |                                                   |                                                  |                                                  |            | ENG                                     | SERIAL                                           |                  | SHEET PF       | ROJ DWG                                          | REV |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           | EV C'                                            |                                                   |                                                  | <del></del>                                      | CODE       | SECT                                    | NUMBE                                            | R                | 00             | DDE SIZE                                         |     |
| L DESCRIPTION : REVISION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | / טאוו    | LX SH                                            |                                                   |                                                  | ио 1                                             | 11M        | 5                                       | 506                                              | 55               | 002 D          | Q 4                                              | Α   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |                                                  |                                                   |                                                  |                                                  |            |                                         |                                                  |                  |                |                                                  |     |
| WorleyParsons-Aral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | nian Indu | etrice / IV/                                     | Contract N                                        | Jo • C31/06                                      | 06 Joh                                           | Ma · D     | A IDA                                   | 40E                                              |                  |                |                                                  |     |

| PRESSURE         06           PRESSURE         06           PRESSURE         06           TEMPERATURE         06           07         07           07         07           07         07           07         07           07         07           08         08           08         08           08         08           08         08           08         08           08         08           09         09           09         09           09         09           09         09           09         09 | 6 MAR.'( 7 8 9 0 1 1 22 33 4 5 66 7 8 99 0 1 2 MAR.'( 3 4 5 66 7 8 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 | CANCE          | J                    | JAN.05.  | APR.'05                                                            |               |                     | DEC.          | 10 MAR.'1            |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------|----------------------|----------|--------------------------------------------------------------------|---------------|---------------------|---------------|----------------------|-----------|
| PRESSURE 06 PRESSURE 06 TEMPERATURE 06 07 07 07 07 07 07 07 07 07 07 07 07 07                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7 8 9 0 1 2 MAR.'() 3 4 5 6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9                                      | CANCE          | J                    |          | APR.'05                                                            |               |                     | DEC.'         | 10 MAR.'1            |           |
| PRESSURE TEMPERATURE 06 07 07 07 07 07 07 07 07 07 07 07 07 07                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 8                                                                                                        |                | J                    |          |                                                                    |               |                     | DEC.'         | IO MAR.'1            |           |
| TEMPERATURE 06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9 0 1 2 MAR.'( 3 4 5 6 7 8 9 0 1 5 6 6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9                           | D2 NOV.        |                      | JAN.05.  |                                                                    |               |                     |               |                      |           |
| 07 07 07 07 07 07 07 07 07 07 07 07 07 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0                                                                                                        | D2 NOV.        |                      | JAN.05.  | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 07 07 07 07 07 07 07 07 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                                                                                        | D2 NOV.        | 2'04                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 07 07 07 07 07 07 07 07 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2                                                                                                        | D2 NOV.        | .'04                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 07 07 07 07 07 07 07 07 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3 4 5 6 7 8 9 6 7 8 6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9                                            | D2 NOV.        | .'04                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 07 07 07 07 07 07 07 08 08 08 08 08 08 08 08 08 08 08 08 08                                                                                                                                                                                                                                                                                                                                                                                                                                       | 4                                                                                                        | D2 NOV.        | .'04                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 07 07 07 07 08 08 08 08 08 08 08 08 08 08 08 08 08                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5 6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9                                                              | D2 NOV.        | 204                  |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 07 08 08 08 08 08 08 08 08 08 08 08 08 09 09 09                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6                                                                                                        | D2 NOV.        | '04/                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 07 07 07 08 08 08 08 08 08 08 08 08 08 08 08 08                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7 8 9 0 0 1 1 2 MAR.'( 3 4 5 6 7 8 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0                                 | D2 NOV.        | 2'04                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 07 08 08 08 08 08 08 08 08 08 08 08 08 08                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 8 9 0 1 1 2 MAR.'(3 3 4 5 6 6 7 8 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0                                  | 02 NOV.        | 704                  |          | APR.'05                                                            |               |                     |               |                      |           |
| 07 08 08 08 08 08 08 08 08 08 08 08 08 08                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 9 0 1 1 2 MAR.'() 3 4 5 6 7 8 9 9                                                                        | 02 NOV.        | .'04 /               |          | APR.'05                                                            |               |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>08<br>08<br>08<br>08<br>08<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0   1   2   MAR.'()   3   4   5   6   7   8   9   9                                                      | D2 NOV.        | .'04                 |          | APR.'05                                                            | 5             |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>08<br>08<br>08<br>08<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                                                                                        | 02 NOV.        | .'04                 |          | APR.'05                                                            |               |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>08<br>08<br>08<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2 MAR.'(<br>3 4 5 6 7 8 9                                                                                | 02 NOV.        | .'04 /               |          | APR.'05                                                            |               |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>08<br>08<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 3<br>4<br>5<br>6<br>7<br>8<br>9                                                                          | 02 NOV.        | .'04 /               |          | APR.'05                                                            | 3             |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>08<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4 5 6 7 8 9 9                                                                                            |                | 4                    |          | APR.'05                                                            |               |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>08<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5<br>6<br>7<br>8<br>9                                                                                    |                | 4                    |          |                                                                    |               |                     |               |                      |           |
| 08<br>08<br>08<br>08<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 6<br>7<br>8<br>9                                                                                         |                | /-                   |          |                                                                    |               |                     |               |                      |           |
| 08<br>08<br>08<br>09<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 7<br>8<br>9                                                                                              |                | /                    |          |                                                                    |               |                     |               |                      |           |
| 08<br>08<br>09<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 9                                                                                                        | $ \downarrow $ |                      |          |                                                                    |               |                     |               | l l                  |           |
| 08<br>09<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 9                                                                                                        | $ \downarrow $ |                      |          | Y                                                                  |               |                     |               |                      |           |
| 09<br>09<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                          |                |                      |          | <b>\</b>                                                           |               |                     |               |                      |           |
| 09<br>09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | o I                                                                                                      | 4              |                      |          | <u> </u>                                                           |               |                     |               |                      |           |
| 09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                          |                |                      | ******** | $\sqcup \!\!\! \perp$                                              |               |                     |               |                      |           |
| 09<br>09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                          | /              |                      |          | $\vdash$                                                           |               |                     |               |                      |           |
| 09<br>09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <del>/-</del>                                                                                            | <u> </u>       | _                    |          | $\vdash \downarrow$                                                | _             |                     |               |                      |           |
| 09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | /_                                                                                                       |                | _                    |          | $\vdash \!\!\! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$ |               |                     |               |                      |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                          |                |                      |          | $\longrightarrow$                                                  |               |                     |               | ļ                    | _         |
| 09                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <del></del>                                                                                              |                |                      |          | <u> </u>                                                           | <del>\ </del> |                     |               | <u> </u>             |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6 <i>V</i>                                                                                               |                |                      |          | <u> </u>                                                           | <u> </u>      |                     |               |                      |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | TPR: 05                                                                                                  |                | - IAC                | DINITE   | OR PROJ.                                                           | יבעי [        | 00                  | 001           |                      |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | JAN.'05                                                                                                  |                |                      |          | OR PROJ.                                                           |               |                     | .001<br>394   |                      | BW        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | FEB'02                                                                                                   |                |                      |          | OR PROJEC                                                          |               |                     |               | OME/26               | - BVV     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | JUN'01                                                                                                   |                |                      |          | FOR PRO                                                            |               |                     |               | ONE/22               |           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                          |                | $\neg \uparrow \neg$ | DOILI    | TON THE                                                            | 70.211        |                     |               | PROJ.ENG.            | SPEC.ENG. |
| REFERENCE TO EQUIPMENT/TAG NUMBERS ARE TO BE PREFIXED BY AREA CODE                                                                                                                                                                                                                                                                                                                                                                                                                                               | DATE                                                                                                     | APPROVED<br>BY | P                    | DES      | CRIPTION                                                           |               | B.I.                | NO.           |                      | PROVAL    |
| NOTES/REFERENCE DRAWINGS IN CASE OF DEVIATIONS MARK                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ŒD UP                                                                                                    | PRINT          |                      |          | DRAWIN<br>SENT                                                     |               |                     |               | DESIGN               |           |
| area : NIMR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7778                                                                                                     |                |                      |          | SCALE :                                                            |               | 2                   | 3             | CAD<br>4 5           | DRAWING   |
| SUB AREA : PRODUCTION ST                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TATION                                                                                                   |                | N                    | vo. 05   |                                                                    | ے م           | ئمار                | نك            | تَميةتَه             | شكة       |
| DRWG.TYPE : LIST OF ALARM<br>TRIP SETTINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | AND                                                                                                      |                |                      |          |                                                                    | REA E         | etrol<br>ENG<br>ECT | SERIAL NUMBER | Developme<br>SHEET P | ent Oman  |
| DESCRIPTION : REVISION / INC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | EX SH                                                                                                    | EET            |                      |          |                                                                    |               |                     |               | 5 004 E              |           |

| TAG NO.        | Tomas de artifecto francisco | TRANSMITTER    | SWI        | TCH SETTING             | ADJ.                                  |
|----------------|------------------------------|----------------|------------|-------------------------|---------------------------------------|
| UNIT:          | SERVICE                      | RANGE          | PROCESS    | TRANSMISSION            | H/L/                                  |
| 48-            |                              | PROCESS UNIT   | UNITS      | SYSTEM UNITS            | HH/LL                                 |
| DO4 1445       | P-48145 SEAL SYSTEM          | 0 4000 10      | 600 kPag   |                         | Н                                     |
| PSA-1445       | PRESSURE                     | 0—1000 kPag    | 400 kPag   |                         | L                                     |
|                | P-48145 SEAL SYSTEM          |                |            |                         |                                       |
| PSA-1445       | PRESSURE                     | 0-1000 kPag    | 300 kPag   |                         | LL                                    |
|                | P-48146 SEAL SYSTEM          |                | 600 kPag   |                         | H                                     |
| PSA-1446       | PRESSURE                     | 0—1000 kPag    | 400 kPag   |                         |                                       |
|                | P-48146 SEAL SYSTEM          |                | 100 Ki ug  |                         |                                       |
| PSA-1446       | PRESSURE                     | 0-1000 kPag    | 300 kPag   | VI III                  | LL                                    |
|                | P-48147 SEAL SYSTEM          |                | 600 kPag   |                         | Н                                     |
| PSA-1447       |                              | 0-1000 kPag    | 400 kPag   |                         | 1                                     |
|                | PRESSURE                     |                | 400 kPag   |                         | L_                                    |
| PSA-1447       | P-48147 SEAL SYSTEM          | 0-1000 kPag    | 300 kPag   |                         | LL                                    |
|                | PRESSURE                     |                |            |                         |                                       |
| PSA-1448       | P-48148 SEAL SYSTEM          | 0-1000 kPag    | 600 kPag   |                         | H                                     |
| F3A-1440       | PRESSURE                     | 10-1000 Ki dg  | 400 kPag   | <u>l</u>                | L                                     |
| DCA 1440       | P-48148 SEAL SYSTEM          | 0 1000 1-0     | 700 LD     |                         |                                       |
| PSA-1448       | PRESSURE                     | 0-1000 kPag    | 300 kPag   |                         | LL                                    |
|                |                              |                |            |                         |                                       |
|                |                              |                |            |                         | .                                     |
|                |                              |                |            |                         |                                       |
|                |                              |                |            |                         |                                       |
|                | DP.ACROSS ESDV               |                |            |                         |                                       |
| PDSA-1492      | 48-UZV-2626A                 | 0-2500 kPa     | 400 kPa    | 6.56 mA                 | H                                     |
|                |                              |                |            |                         |                                       |
| PDSA-1493      | DP.ACROSS ESDV               | 0-2500 kPa     | 400 kPa    | 6.56 mA                 | Н                                     |
|                | 48-UZV-2627A                 |                |            |                         |                                       |
| PDSA-1494      | DP.ACROSS ESDV               | 0-2500 kPa     | 400 kPa    | 6.56 mA                 | Н                                     |
| 103/(1131      | 48-UZV-2628A                 | 0-2000 Ki u    | 100 KI G   | 0.00 1177               |                                       |
| PDSA-1495      | DP.ACROSS ESDV               | 0.0500 1.0-    | 400 kPa    | 6.56 mA                 | Н                                     |
| FD3A-1493      | 48-UZV-2626C                 | 0-2500 kPa     | 400 KFU    | 0.50 IIIA               |                                       |
| DDG4 4400      | DP.ACROSS ESDV               | 0.500.10       | 400 10     | 0.50                    |                                       |
| PDSA-1496      | 48-UZV-2627C                 | 0-2500 kPa     | 400 kPa    | 6.56 mA                 | Н                                     |
|                | DP.ACROSS ESDV               |                |            |                         |                                       |
| PDSA-1497      | 48-UZV-2628C                 | 0-2500 kPa     | 400 kPa    | 6.56 mA                 | H                                     |
|                | 10 021 20200                 |                |            |                         |                                       |
| l              |                              |                |            |                         |                                       |
|                | DP.ACROSS ESDV               |                | <u></u>    | +                       |                                       |
| PDIZA-1523     | l '                          | 0-600 kPa      | 400 kPa    | 14.6 mA                 | H \$                                  |
|                | 48-UZV-2660                  |                |            | <del></del>             | لسب                                   |
|                |                              |                |            |                         |                                       |
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|                |                              |                |            |                         |                                       |
|                |                              |                |            |                         |                                       |
|                |                              |                |            |                         |                                       |
| Į.             |                              |                |            |                         |                                       |
|                |                              |                | SCALE :    |                         | DRAWING                               |
| AREA :         | NIMR                         |                | 0          | 1 2 3 4 5               | 6 7                                   |
|                |                              |                |            | 1-2 1 2 45 44           | · · · · · · · · · · · · · · · · · · · |
| SUB AREA : F   | PRODUCTION STAT              | ION            | NO. 05     | نميه معطعمان            | شرته                                  |
|                |                              |                |            | Petroleum Developme     | ent Oman                              |
| DRWG.TYPE : L  | IST OF ALARM &               | TRIP SET       | TINGS      |                         |                                       |
| DAMO. FIFE : C |                              | ,,,,,          | I DRWG I 7 | AREA ENG SERIAL SHEET F | ROJ DWG REV.                          |
| F              | PRESSURE INSTRU              | MENTS          |            |                         |                                       |
| DESCRIPTION :  | NESSONE MS INO               | IVI L. I V I U | NO NO      | NM 5 5065067[           | Q 4 A                                 |
|                |                              |                |            |                         |                                       |
|                |                              |                |            |                         |                                       |

# INSTRUMENT ENGINEERING

# DATA SHEETS

Vendor details to be provided

APPROVED FOR CONSTRUCTION FT KBA ISSUED FOR COMMENTS

THIS COMPLETE DWG. IS BASED ON 'CN' PROJECT WBS NO. NIM.IN.08.002, REV.A AFC.

|                                                                              |           |             |                                     |                |                   |             |         |                                                              |                                                                                  | _           | 2                   |                            |  |
|------------------------------------------------------------------------------|-----------|-------------|-------------------------------------|----------------|-------------------|-------------|---------|--------------------------------------------------------------|----------------------------------------------------------------------------------|-------------|---------------------|----------------------------|--|
|                                                                              | 80, 09    |             | ASD AS BUILT UPTO NOV.'08 0T.08.005 | OT.08.005 OSC  | 0S0/22N SK        | M OFFERD    | Ā       | CHECKED                                                      |                                                                                  |             |                     | P D O APPROVAL             |  |
|                                                                              | T APR.05  | 1/          | AS BUILT FOR PROJECT '5X' 02.001    | 02.001         | BW                |             |         |                                                              | PROJECT DRAWING REVISION                                                         | G REVISION  |                     |                            |  |
|                                                                              | S JAN.05  | /           | AS BUILT FOR PROJECT 3Y & X4 00,394 | 20.394 495.052 | BW                | IN CASE     | OF DEVI | ATTONS A                                                     | BW IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER | IAIL BE SEN | TO THE P            | ROJECT ENGINEER            |  |
|                                                                              | R DEC'04  |             | AS BUILT FOR PROJ SE                | 1.116          | OSE/24N           | i.          |         |                                                              |                                                                                  | SCALE:      | r .                 | CAD DRAWING                |  |
|                                                                              | Q DEC'04  |             | AS BUILTER PROJ. 'SV                | IN.02.002 TT   | TTP/57            | AREA        | NIMK    |                                                              |                                                                                  | 188         | Parament I          | Section 200                |  |
|                                                                              | P JUNE 02 | \           | AS BUILT FOR PROJECT '76            | A              | OME/13            |             |         | NO IT O                                                      |                                                                                  | - AN        | ٠.                  | اشكائة تنستة فذرائها       |  |
|                                                                              | N MAR'02  |             | AS BUILT FOR PROJ 4P 00.802         |                | OME/41 JAMAL      | SUB AREA    | טטאר:   |                                                              | SUB AREA : PRODUCITOR SIATION                                                    | F. 03       | )<br>(C             | ) :                        |  |
|                                                                              | 0 ACT.97  |             | AS BUILT FOR PROJECT L4             | 93.609         |                   | 7           | ļ       |                                                              |                                                                                  |             | Petroleum           | Petroleum Development Oman |  |
|                                                                              | ı         | (F) (F) (F) |                                     | ě.             | PROLENG. SPECENG. | DRWG.TYPE   | N<br>N  | ENCE<br>ENCE<br>ENCE<br>ENCE<br>ENCE<br>ENCE<br>ENCE<br>ENCE | INST. ENGINEERING UATA SHEET                                                     |             | DRWG AREA ENG SERAL | SHEET PROJ DWG REV.        |  |
|                                                                              | REV DATE  | <u></u>     | הפכשה וורש                          | - Charles      | PDO APPROVAL      |             | (       | į                                                            | ŀ                                                                                |             |                     |                            |  |
| NOTES/REFERENCE DRAWNGS                                                      |           |             | MASTER DRAWING REVISION             | VISION         |                   | DESCRIPTION |         | DESCRIPTION : COVER SHEET                                    |                                                                                  | Q<br>Q      | IM 5 52             | NIM 5 5271 000 DQ 3 A      |  |
| IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE | D UP PRIN | T SHALL 1   | BE SENT TO COASTA                   | L DESIGN (     | FFICE             |             |         |                                                              |                                                                                  |             |                     |                            |  |
|                                                                              |           |             |                                     |                |                   |             |         |                                                              |                                                                                  |             |                     |                            |  |

PROJ. ENG. SIGNATURE P D O APPROVAL

B. 30

REV DATE

IN.09.011 OSE/23N IN.09.011 OSE/23N

APPROVED FOR CONSTRUCTION

SCOPE OF 'DQ' PROJECT WBS NO.:NIM.IN.09.011

WorleyParsons-Arabian Industries (JV) Contract No.: C31/0606 Job No.: PAIP00405

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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                                                                                                                                                                                                                    |                                       | Group 31       | 5           | Group 32   | 8              | Group 33 | -        |                 |              |          |
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                                               | Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   Marcin   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                                                                                                                                                                                                                    |                                       | Analyser and   | Flow        |            |                | Level    |          |                 |              |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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                                                                                                                                                                                                                    | Sheet Bevision                        | Shoet Revision | Shoot       | 180 E      | Sheet Bevi     | J        |          |                 | _            |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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                                                                                                                                                                                                                    | 2488 N R                              | 520            |             | 6          | 402 0          | 452 0    |          |                 |              |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 110F                                    | ⊢<br>∝     | 7 0           | П                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 248C N R 1                            | 53 0           |             | 0          |                | 453 0    |          |                 |              |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 198                                     | F-         | -             | 204                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2480 N R 7                            | 55.0           | olc         |            |                | 455 0    |          |                 |              |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1107                                    | <u>+</u>   | H             | 206                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 248F R T                              | 7 256          | 0           |            |                | 456      |          |                 |              |          |
| Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   | Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   |                                         | <u> </u>   | -             | 207                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2486                                  | 257            | 0           |            |                | 457      |          |                 |              |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                         | \<br> <br> |               | 209 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | $oxed{\Box}$                          | 259            | 1           | 359        |                | 459      |          |                 |              |          |
| 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                         | )<br>V     |               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ٦                                     | 260            | $\top$      | 360        |                |          |          |                 |              | 1        |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | +                                       | < v        |               | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       | 262 0          | 312         | 7000       | 412            |          |          |                 |              |          |
| 1985   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982   1982      | 10   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 112                                     |            |               | 213 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | 263            | 313         | о<br>->    | 413            |          |          |                 |              |          |
| 1985   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987   1987      | 1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985   1985      |                                         | <br> - -   | z             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | 264            | 314         | 364        | 414 0          | ┿        |          |                 |              | <u> </u> |
| 1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960      | 1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960   1960      |                                         | -          | zz            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                | 316         | 0          | 416 0          | +-       |          |                 |              |          |
| Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   | 1985   18   18   18   18   18   18   18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 116                                     | 0          | F             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                | 317         | 0          | 0              |          |          |                 |              |          |
| Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Control   Cont   | Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   |                                         | 00         | F R T         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | 268            | 318         | 368 E      | 0              | -        |          |                 |              |          |
| Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   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Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   | 0 0                                     |            | 1             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ‡<br>‡                                | 270            | 320 0       | Ξ          | 420            | +-       |          |                 |              |          |
| Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   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Column   Column   Column   Column   Column   C   | Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   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Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   |                                         | 00         | EU IT         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | 271            | 321         | S          | 421 T          | +-       |          |                 |              |          |
| Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   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Column   Column   Column   Column   Column   C   | Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia   Columbia    | 121                                     | 0          | 0             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | 272            | 322         | 371A T     | 422 T          | 472 0    |          |                 |              |          |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                                                                                                                                                                                    | †<br>                                 | 273            | 323         | 3718 T     | 423 T          | 473 0    |          |                 |              |          |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       | 275            | 325         | 3//6       | 425            | 475 0    |          |                 |              |          |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   Columbric   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                                                                                                                                                                                                                             |                                       | 276            | 326         | 372 0      | 426            | 476 0    |          |                 |              |          |
| N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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                                                                                                                                                                                                                    |                                       | 277            | 327         |            | 0              |          |          |                 |              |          |
| No.   1773   27   270   27   27   27   27   27   2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                                                              | 0 127                                   | <u>ا</u>   | 9             | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       | 278            | 328         |            |                | 1        |          | †<br>†          |              |          |
| 17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5   17.5      | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       | 278            | _           |            | 7.50 0 1       | ‡        |          |                 |              |          |
| 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                                                              | 1                                       | œ<br>z z   | T             | ၁ပ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u> </u>                              | 281            |             | 377 0      | 431            | ļ        |          |                 |              |          |
| 1775   0   224   0   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   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177   0   177   0   177   0   0   0   0   0   0   0   0   0                                      | 0 128                                   | D          | 0 +           | O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       | 282            | 332         | 378        | 432            | D        |          |                 |              |          |
| 175   0   235   C   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   177   0   0   0   0   0   0   0   0   0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 129                                     | 5          | .5 0          | C S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       | 283            | 333 T       | 379        | 433            |          |          |                 |              |          |
| 1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,000   1,00   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 130                                     |            | _             | )<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | 284            | 334         | ₹          | ***            |          |          |                 |              |          |
| 190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190   190    | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 131                                     |            | बं            | ાં                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | +                                     | 285            | 335         | ><br>0     | 2 435          | <u>د</u> | 1        |                 |              | 1        |
| 1   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 137                                     |            | 9             | عاد                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       | 287            | 330         | 383        | 437 B          | -        |          |                 |              | I        |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 181   0   220   2   2   2   2   2   2   2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 13.5                                    | 1          | _             | 238 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | 288            | 338         |            | 438 8          | F        |          |                 |              |          |
| 152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152   152    | Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   Column   C   | 135                                     | 1          | $\overline{}$ | t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       | 289            | 339         |            | 439 B          |          |          |                 |              |          |
| 1845   0   242   0   242   0   242   0   252   252   243   0   254   252   254   252   254   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   252   2   | 184   0   243   0   243   0   243   0   243   0   243   0   243   0   243   0   243   0   243   0   243   0   243   0   243   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   0   244   244   0   244   0   244   0   244   0   244   0   244   0   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244   244    | 136                                     | 1          | _             | T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       | 290            | 340         |            | 440 B          | 490      |          |                 |              |          |
| 196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196   196    | 184   0   242   0   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 137                                     |            | _             | Н                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       | 291            | 341         | 387 C L T  | 441 B          | 491      |          |                 |              |          |
| 186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186    | 186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186   186    | 138                                     |            |               | 242 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       | 292            | 342         | 388 0 S U  | 442 C          | 492      |          |                 |              |          |
| 186   O DELED 244   O L   186   O DELED 244   O L   186   O DELED 245   O L   186   O DELED 245   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O L   186   O    | 186   0   0   0   0   0   0   0   0   0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 139                                     | S          |               | 243                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       | 293            | 343 0 S     | 0          | 443 0 A        | 493      |          |                 |              |          |
| 185   0   244   0   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 187   0   245   0   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 140                                     | 9          | ODELET        | 244                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       | 294            | S           | S<br>O     | 1 0 <b>1</b> 1 | +        |          |                 |              |          |
| 190   2446   0   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 188   0   246   0   246   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 141                                     | 0          | 0             | 245 0 L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                       | 295            | <b>a</b>    | ာ<br>ပ     | S 445 0        | +        |          |                 |              |          |
| 191   192   193   194   194   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195    | 198   0   248   0   5   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 142                                     |            | _             | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |                | 346         |            | 0 9 1          | 496      |          |                 |              |          |
| 190   190   2484   T   U   U   U   U   U   U   U   U   U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 190   248                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 143                                     |            | _ 1           | L S O                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                |             | 0          | 447            | 497      |          |                 |              | 1        |
| 191   0   192   193   194   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195   195      | 191   0   248   0   1   1   1   1   1   1   1   1   1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u></u>                                 |            | _             | F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |                |             | 7          | _              | 498      |          |                 |              | I        |
| 194   0 T   194   0 T   194   0 T   194   0 T   194   0 T   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195    | 192   0 T   193   0 T   24/1   D   194   0 T   24/1   D   195   0 T   24/1   D   195   0 T   24/1   D   195   0 T   24/1   D   195   D   24/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   D   25/1   | 145                                     |            | _             | F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |                | 349         | 0          | _              | 499      |          |                 |              |          |
| 194   0 T   194   0 T   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0      | 194   0 T   194   0 T   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0      | 146                                     |            | _             | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |                |             | 396 0 H U  |                |          |          |                 | †<br>        | I        |
| 195   0   195   0   197   0   198   0   197   0   198   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199    | 195   0   196   0   197   0   198   0   0   0   198   0   0   0   198   0   0   0   198   0   0   0   198   0   0   0   198   0   0   0   198   0   0   0   0   0   0   0   0   0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 14,0                                    |            |               | I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                       |                |             | 7 7/20     |                |          |          |                 |              |          |
| 196   0   198   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199    | 198                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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                                                                                                                                                                                                                    | <u> </u>                              |                |             | z          |                |          |          |                 |              |          |
| 198   0   198   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199    | 195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195   0   195    | 150                                     | S          | 1             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                |             | 5          |                |          |          |                 |              |          |
| 198   0   198   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199    | 198   0   198   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199    | L M 151                                 |            | _             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                |             |            |                |          |          |                 |              |          |
| 199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0   199   0  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                                                                                                                                                                                                                       |                                       |                |             |            |                |          |          |                 |              |          |
| U   NGW, 108                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | U   NGW, 108   AS BUILT UPTO NOV. 108 OT.08.005   OSO/22N SK   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   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SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   SKALE   | F 153                                   |            | _             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                |             |            |                |          |          |                 |              |          |
| U   NOW, 108   AS BUILT UPTO NOW, 108 101.08.005   OSO/22N   SK AS BUILT UPTO NOW, 108 101.08.005   OSO/22N   SK AS BUILT FOR PROLICET SY   OZ 0.04   BW   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB 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AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   | U   NOW, 10B   AS BUILT UPTO NOW, 10B   OT. 08.005   OSO/22N   SK   AS BUILT UPTO NOW, 10B   OT. 08.005   OSO/22N   SK   AS BUILT FOR PROLÉCT SY   OZ. 004   BW   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB AREA   SUB 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BUILT FOR PROL'SK   1900   AS BUILT FOR PROL'SK     | T APR.'05   AS BULL FOR PROLECT '5X OZ 004   BW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | *************************************** | 7.70×10    |               | AS BUILT UPTO N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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WorleyParsons-Arabian Industries (JV) Contract No.: C31/0606 Job No.: PAIP00405

|          |                         | Shoet Revision Sheet Revision |                |                 |                 |           |                                         |                 |         |                                         |           |                                         |        |           |       |       |             |        |               |        |           |           |           |             |             |     |                                          |         |         |           |          |         |           |      |           |   |           |          |   |           |           |         |     |                                         |     |       |           |  | WBS NO PROLLENA, SIGNATURE | P D O APPROVAL | £                                | 의                             | CAD DRAWING |                                     |        | いいでは、           |             | DWG LOSE TO THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE 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|          | Temperature             | Shoet                         | S U            |                 | S U             | S U 803   | n s                                     | 0   508       8 | 908     |                                         | 808 0     | 808                                     | 810    |           | 812   | 813   | 764 814 0   | 815    |               |        | 768 818 0 | 610       | 820       |             | 7/4         | ┿   | 775 0 825                                |         | 827     | 778 828 0 | 828      | 781     | 782 832 0 | 833  | 784 834 0 |   | 836       | 0 /28    |   | 790 840 0 | 841       | 842     | 843 | ‡<br>†                                  |     | 847 0 | 798 848 0 |  | DATE DRAWN TEAML LENG.     | $\dashv$       |                                  | CASE OF DEVIATIONS A          |             | . NIMR                              | i      | AREA PRODUCTION |             | INSTRUMENT I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | DATA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |                          |
| Group 35 | Temperature Temperature | Revision Sheet                | S   700        | 0 701 0         | 0   0   702     | 0 2   203 | 0 704                                   | 0 705           | 0 706   | 707                                     | 708       |                                         | 710    | 0 711     | 712   | 0 0 0 | 0 714 0 D S | 715 0  | -             | 717    | 718 0     | 0         | 720       | 0 177       | 7,64        | 124 | 0 725 0                                  | 0 726   | 0       | -         | 0        |         |           | 0    | Н         | 2 | +         | +        | , | 0 T 740   | 0 1       | L 0     | 743 | 744 0                                   | 748 | 0     | 748       |  |                            | Ř              | BW                               | BW IN                         | OSE/24N     | 002 TTP/57 AREA                     | OME    | 975             | / min/ min/ | ONG COO                                                              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| 2639-001-00                           |                        |                                                  | <del></del>           |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0997-\ZU-8≱                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1                |
| H2-2230                               | 5)                     |                                                  |                       |                       |                   |                    |                                                  | PIELD RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | FIELD RESET FOR ESD VALVE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | HS-2230          |
|                                       |                        |                                                  |                       |                       |                   |                    | 7007                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
|                                       |                        | <b></b>                                          |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| 3637-001                              |                        |                                                  |                       |                       | 010/100-0811/0+08 |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 48-UZV-2628A/B/C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |
| H2-2648                               |                        |                                                  | ٦                     |                       | EE2~110¢          | JH <b>Y</b> LS     | RQ5135                                           | HELD RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | LIELD RESET FOR ESD VALVE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | H2-2648          |
|                                       |                        |                                                  |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
|                                       |                        | ļ                                                |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| 192-2647                              |                        | <del> </del>                                     | 7                     |                       | 8040/1180-001/010 | THATZ              | 2512-DA                                          | FIELD RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HELD RESET FOR ESD VALVE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ∠ <b>+</b> 9₹−SH |
| 743C_2H                               |                        | <del> </del>                                     | ı                     |                       | 7011-233          | ILATO              | 3513_00                                          | EIED DESCET DISCH BITTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LEGI BEEET EOB ECO MINE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 7196-3H          |
|                                       |                        | <del>                                     </del> |                       |                       |                   |                    | _                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| 100-7535                              |                        |                                                  |                       |                       | 010/100-0811/0408 |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 48-UZV-2626A/B/C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |
| HS-2646                               |                        | <u> </u>                                         | 7                     |                       | EE2-1104          | STAHL              | RQ-5135                                          | FIELD RESET PUSH BUTTON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | LIETD KEZEL ŁOK EZD AVTAE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | H2-2646          |
|                                       |                        | ┼                                                |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>-</b>         |
| 1354-001                              | (1                     |                                                  | Я                     |                       |                   | FOXBORO            | <del>                                     </del> | TUTTUO JATADIO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| HS-2512                               |                        |                                                  | 8                     |                       |                   | FOXBORO            |                                                  | PUSH-BUTTON(DCS_SOFTKEY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | K-4802 VIB BLOWER STOP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HS-2512          |
|                                       |                        |                                                  |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| 100 1701                              | <del>,</del>           |                                                  |                       |                       |                   | 01/05/10           |                                                  | 10 1100 7211019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| 1324-001                              | 1                      |                                                  | 8<br>8                |                       |                   | ЕОХВОКО<br>ЕОХВОКО |                                                  | PUSH-BUTTON(DCS, SOFTKEY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | K-4805 AIR BLOWER START                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | H2-251           |
| 1190 311                              |                        | <del>                                     </del> | 0                     |                       | :                 |                    |                                                  | удидоз зодунодна папа                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10412 G3MO IG GIV 9007 //                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FF30 3H          |
|                                       | -                      |                                                  |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
| 2401-001                              |                        |                                                  |                       |                       |                   | avs = -            |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 48-LRCA-156A & 48-LRCA-655                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L                |
| H2-7210                               |                        | <del> </del>                                     | 8                     |                       |                   | FOXBORO            |                                                  | SETECLOB SMLICH(DCS SOFTKEY)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MANUAL SELECTOR 48-LIC-111B/                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | HS-2510          |
| DEFS NO.                              |                        |                                                  |                       |                       | ľ                 |                    | 1 1                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1 1              |
| -84                                   | Remarks                | , A                                              | Board<br>Local<br>Rac | Range or<br>Set point | eq(T\.oN leboM    | anbhijer.          | Requisition No.                                  | Components                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | solves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -84              |
| TOU NO.                               |                        | "                                                |                       |                       |                   |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |
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|                                       | r. Job No. :           |                                                  |                       | STMEMUS               | N. NEOUS INSTR    |                    |                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |
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ENGINEER |                                        |                                     |                                      |                                                  |                |                     |                 |                                      |                                         |                 |                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| nam0 Jna                       | -        | _                              |                             |                               | 90 '02                                       | NOUV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         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 | A TON NOT                            | FORMA.                                           | и яос          | E NEM               | HENC            | ,IA GW                               | SEMENT NOT BY                           | (2) PROCUR      | ክስር — ዝ bood<br>ጋሚያና<br>የሚርታሊያልያብ<br>አንድርሊያልዲያብያር<br>መደርሊያ<br>መደርሊያ<br>መደርሊያ<br>መደር<br>መደር<br>መደር<br>መደር<br>መደር<br>መደር<br>መደር<br>መደር<br>መደር<br>መደር | A lines for PC<br>Tines for Pdi<br>Tines for Pdi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| څيځت                           | , , ,    | 5.01                           | . الله                      |                               |                                              | MOIT V.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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 |                                      |                                                  |                |                     |                 |                                      |                                         | I) ZANBBE       | PRC.PA.Pd.PdR                                                                                                                                      | To the series 2<br>The series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the 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| PG-052                         |          | 1                              | -                           | 1655                          |                                              | - 0-200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | -            | AOTAVA3280                             | -                                   | CAUGE                                | 500                                              | -              | 155                 | 0+              | 706.0                                | MASHED OIL                              | 9MU9 A3T200     | DB 6084-9                                                                                                                                          | PG-052                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| NIM-1-<br>beezwo               |          | אנואר ויספיתו<br>אנואר ויספיתו |                             | aterial                       | M bedoeth                                    | Q(T TO<br>Perform<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si<br>D°Si | eq.(T lebold |                                        | enedmun                             | Rec. 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| J               | <u></u>                 |                     | : ON C                    | Contr. Job    |            | \$                                    | INSTRUMENTS<br>T                                 |                    |                                                  |                                |                                                              |           |              | OHU                 |                        |                                 |              | 11 02100      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
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|                 | o <del>i no ma</del> ss | Boord<br>or<br>lood | krunoo<br>anottoo<br>0.19 |               | mary eleme |                                       | Kpa(g)  Kpa(g)  Komae                            | noticinosed second | Monufacturer                                     | quorg—dus<br>loftee<br>snedmun | Components<br>e.g.<br>Transmitter<br>Rec. Controller<br>etc. | Kba       | (            | stodo pres<br>Kpa(a | Normal<br>drinet<br>or | MM<br>Adbons                    | bluFl        | Service       | лом 201<br>—84                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| PEFS No.        | l,                      | Aux room            |                           | laterial      | 71         | Type<br>protected<br>non-protected    | P69                                              | ad()               |                                                  |                                | epte.                                                        | Menc      | ,шюн         | '4#                 |                        | Chemb\rap qs<br>Anow 30<br>coms |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
| PDIZA-152       | (1                      |                     |                           |               |            | dp CETT                               | 009-0                                            |                    |                                                  | RO                             | A∃TTIM2NAЯT 9△                                               |           | 01           |                     | 52~20                  | 0.1-56.0                        | STADGE OIL   | DSZ ESD AVTAE | IZA-1523 DP ACRO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>ud</u> |
| 7639-001-0      |                         |                     |                           |               |            |                                       |                                                  |                    |                                                  | 2009                           | LEST TIMES - 2.1                                             |           |              |                     | 00.00                  | 011 001                         | 70 705070    | -027-720-     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <u></u>   |
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|                 |                         |                     |                           |               |            |                                       | <del>                                     </del> |                    | <del>                                     </del> |                                |                                                              |           |              | <u></u>             | -                      |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
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|                 |                         |                     |                           |               |            |                                       | <del>                                     </del> | <u> </u>           | <b>!</b>                                         |                                |                                                              |           |              |                     | <del> </del>           |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
|                 |                         |                     |                           |               |            |                                       |                                                  |                    |                                                  |                                |                                                              |           | <del> </del> |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
|                 |                         |                     |                           |               |            |                                       | ļ                                                |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
|                 |                         |                     |                           |               |            |                                       |                                                  |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
|                 |                         |                     |                           |               |            |                                       |                                                  |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
| <del></del>     | $\neg \dagger$          |                     |                           |               |            |                                       |                                                  |                    |                                                  |                                |                                                              |           |              | <u> </u>            |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
|                 |                         |                     | <b>-</b>                  | <b></b>       |            |                                       |                                                  |                    |                                                  |                                | <b></b>                                                      | <b>-</b>  |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
|                 |                         |                     |                           | <b> </b>      |            |                                       |                                                  |                    |                                                  |                                | <b> </b>                                                     | <u> </u>  | ļ            | <del> </del>        | <del> </del>           | <b> </b>                        |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
|                 |                         |                     |                           |               |            |                                       | <u> </u>                                         |                    | <b> </b>                                         |                                |                                                              | <u> </u>  |              | <u></u>             |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
|                 |                         |                     |                           |               |            |                                       |                                                  |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
|                 | ~ .                     |                     |                           |               |            |                                       |                                                  |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
| IEEL            |                         |                     |                           | <b></b>       |            |                                       |                                                  |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | _         |
| DRAWING COMPANY | TAD                     |                     |                           | - : SCVTE : - | <u> </u>   |                                       | T                                                |                    |                                                  | 1                              | SNOIS                                                        | BENG      | ON OE        | паія                | <u>)6 DEC</u>          | N UNA                           | KEWARKS      | 1             | · ·                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | _         |
| . 9 <u>!</u>    | <u> </u>                | , E                 | 7                         | . 0           |            |                                       |                                                  | ЯN                 | 11U: A35W                                        | AILABLE.                       |                                                              |           |              |                     |                        |                                 | REMENT NOT B | 1) PROCU      | bood — Pi bas 9 vot seral                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | z<br>n    |
| اردار به        | . 7.3                   |                     | 37.                       | 4434          |            |                                       | 14011.47                                         |                    |                                                  |                                |                                                              |           |              |                     |                        |                                 |              |               | ines for P and PI — local<br>lines for PLPR-PA-PA-PAR<br>lines for PLPR-PA-PA-PA-PAR-<br>lines for PICA-PRCA-PARCA<br>lines for PICA-PRCA-PARCA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ž         |
|                 | _ <u></u>               |                     | ^                         |               | 90 °04     |                                       | NOTIA                                            | S NOITONOS         | אורא: vasav eus                                  |                                |                                                              |           |              |                     |                        |                                 |              |               | IN THE TOTAL PROAPERATION IN THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION OF THE PROAPERATION | 9         |
| nent Oman       | IQOISYE                 |                     |                           |               | 1 73.      | TA SHF                                | ING DA                                           | ST. ENGINEER       | PINI                                             | <u> </u>                       |                                                              |           |              | ·                   |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
| CODE SIZE       | TEER                    | AUMBER<br>Serape    | ENC<br>ENC                | DRING AREA    | l ,        | 7UC VI                                | Va on                                            |                    | CVII: 3977.0WRO                                  |                                |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
| A δ DO∃         |                         |                     |                           | 1             | ]          | SI                                    | RUMENT                                           | ESSURE INST        | ЯЧ: могическа                                    | <del> </del>                   |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
| سا د امرا-      | 1660                    | 1/7                 | יר כ ו                    | IALIAL ON     |            |                                       |                                                  |                    |                                                  | <u> </u>                       |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |
|                 |                         |                     |                           |               |            |                                       |                                                  |                    |                                                  | =                              |                                                              |           |              |                     |                        |                                 |              |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |

|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             | ····                      |              | Data sheet for<br>ESD VALVES            |                                         |                                         | Design be               | ook No.:                         | PAIP00238                            |                   |                          |
|----------------|---------------------------------|------------|--------------------------------------------------------|-----------------|----------------------------------|----------------------------------------|-------|------------------------|--------------------------------------------------|---------------------|-------------|---------------------------|--------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|-------------------------|----------------------------------|--------------------------------------|-------------------|--------------------------|
|                | GENERAL.                        |            |                                                        |                 | OPERATIN                         | ATTON                                  | S     |                        | T                                                |                     |             |                           |              | INSTRUMENT                              |                                         |                                         |                         |                                  |                                      |                   |                          |
| Tag No.<br>48– | Service                         | Fluid      | Gas or<br>vapour<br>MW<br>Liquid<br>sp. gr.<br>at work | Normal<br>temp. | Normal<br>pressure<br>(upstream) | Pressure<br>drop<br>at normal<br>cand. |       | low<br>Sm3/d<br>: m3/d | Requisition<br>sub-group<br>serial<br>numbers    | Suppli              | ier         | Туре                      | Line stza    | Body<br>Size<br>connectione<br>Material | inner valve<br>Type<br>Size<br>Material | Spring<br>action<br>open<br>or<br>closs | Fins<br>yes<br>or<br>no | Hand<br>wheel<br>yes<br>or<br>no | Vaive<br>poettion<br>yes<br>or<br>no | Remarks           | Tag No.<br>48—           |
|                |                                 |            | at work<br>temp.                                       |                 | kPo(g)                           | k₽a                                    | Norm. | Manu                   | 1                                                |                     |             |                           | Sch.         |                                         |                                         |                                         |                         |                                  |                                      |                   | PEFSNO.<br>NIM-1-        |
| UZV-2626A      | ESD VALVE ON TANK T-4817 INLET  | WET CRUDE  | 0.927                                                  | 30~40           | 120                              |                                        | _     |                        | RQ-5001                                          | BALL VALVE          | -VIRGO      | ALGAS 185-                | 40°          | 40"                                     | BALL 36"                                | CLOSE                                   | NO                      | NO                               | NO                                   |                   | UZV-2626A                |
|                |                                 |            | (0/c)                                                  |                 |                                  |                                        |       |                        |                                                  | PNEUM               | ATIC        | 9800-935-CL               | 300 #        | Flanged                                 |                                         |                                         |                         |                                  |                                      |                   | 3637-001                 |
|                |                                 |            | 1.006                                                  |                 |                                  |                                        |       |                        |                                                  | ACTIVATOR           | R-BIFFI     |                           |              | ,                                       |                                         |                                         |                         |                                  |                                      |                   |                          |
|                |                                 |            | (WATER)                                                |                 |                                  |                                        |       |                        | <b>-</b>                                         |                     | ·           |                           | -            |                                         | ļ                                       | _                                       |                         |                                  |                                      |                   |                          |
| UZV-2626B      | EQUALISING VALVE ACROSS         | WET CRUDE  | 0 927                                                  | 30~40           | 120                              |                                        |       |                        | RQ-5001                                          | BALL VALVE          | -VIRCO      | RPS 120-                  | 6"           | 6°                                      | BALL 4"                                 | CLOSE                                   | NO                      | NO                               | NO                                   |                   | UZV-2626B                |
| 024-20200      | 48-UZV-2626A/C                  | WEI ORODE  | (0/C)                                                  | 3040            | 120                              | <b> </b>                               |       |                        | 1100 5551                                        | PNEUM               |             | S2-C2-CL                  | 300#         | FLANGED                                 | - DE 1                                  | OLOGE                                   | 110                     |                                  | 110                                  |                   | 3637-001                 |
|                | 10 001 0020 4 0                 |            | 1.006                                                  | 11              |                                  |                                        |       |                        |                                                  | ACTIVATOR           |             |                           |              |                                         |                                         | 1                                       |                         |                                  |                                      |                   |                          |
|                |                                 |            | (WATER)                                                |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         |                                         |                         |                                  |                                      |                   |                          |
| UT1 00000      |                                 | WET ADUDE  | 0.007                                                  | 70. (0          | 400                              |                                        |       |                        | DO C004                                          | 544. 444.           | 15000       | 11010 400                 | 409          | 407                                     | DIII 70*                                | 01.005                                  | 110                     | - 110                            | 1/0                                  |                   | 11787 00000              |
| UZV-2626C      | ESD VALVE ON TANK T-4817 INLET  | WET CRUDE  | 0.927<br>(0/C)                                         | 30~40           | 120                              |                                        |       |                        | RQ-5001                                          | BALL VALVE<br>PNEUM |             | ALGAS 185-<br>9800-935-CL | 40"          | 40"<br>Flanged                          | BALL 36"                                | CLOSE                                   | NO                      | NO                               | NO                                   |                   | UZV-2626C<br>3637-001    |
|                |                                 |            | 1.006                                                  |                 |                                  |                                        |       |                        | <del>                                     </del> | ACTIVATOR           |             | 3000-300-02               | 300 #        | 1 DATOLD                                | -                                       | +                                       |                         |                                  |                                      |                   | 3037-001                 |
|                |                                 | 1, 10      | (WATER)                                                |                 |                                  |                                        |       |                        | <del> </del>                                     | 7,01177101          | <u> </u>    |                           | <del> </del> |                                         |                                         | 1-                                      |                         |                                  |                                      |                   |                          |
|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         |                                         |                         |                                  |                                      |                   |                          |
| UZV-2627A      | esd valve on tank t—4818 inlet  | WET CRUDE  |                                                        | 30~40           | 120                              |                                        |       |                        | RQ-5001                                          |                     |             | ALGAS 185-                | 40"          | 40"                                     | BALL 36"                                | CLOSE                                   | NO                      | NO                               | NO                                   |                   | UZV-2627A                |
|                |                                 |            | (0/c)                                                  | ļ               | <u> </u>                         |                                        |       | <u> </u>               | <b> </b>                                         | PNEUM               |             | 9800-935-CL               | 300 #        | FLANGED                                 | ļ                                       |                                         | ļ                       |                                  |                                      |                   | 3637-001                 |
|                |                                 |            | 1.006<br>(WATER)                                       | <u> </u>        | <b></b>                          | ļ                                      |       |                        | <b></b>                                          | ACTIVATOR           | K-BIFFI     | <br>                      | <del> </del> |                                         | <b> </b>                                | -                                       |                         |                                  |                                      |                   |                          |
|                |                                 |            | (WATER)                                                | <u> </u>        |                                  |                                        |       |                        | <b>-</b>                                         | <b></b>             |             | 1                         |              |                                         |                                         | +                                       |                         |                                  |                                      |                   |                          |
| UZV-26267B     | EQUALISING VALVE ACROSS         | WET CRUDE  | 0.927                                                  | 30~40           | 120                              |                                        |       |                        | RQ-5001                                          | BALL VALVE          | -VIRGO      | RPS 120-                  | 6"           | 6*                                      | BALL 4"                                 | CLOSE                                   | NO                      | NO                               | NO                                   |                   | UZV-2627B                |
|                | 48-UZV-2627A/C                  |            | (0/C)                                                  |                 |                                  |                                        |       |                        |                                                  | PNEUM               |             | S2-C2-CL                  | 300#         | Flanged                                 |                                         |                                         |                         |                                  |                                      |                   | 3637-001                 |
|                |                                 |            | 1.006                                                  |                 |                                  |                                        |       |                        | ļ                                                | ACTIVATOR           | R-BIFFI     |                           |              |                                         |                                         | <u> </u>                                |                         |                                  |                                      |                   |                          |
| <u> </u>       |                                 |            | (WATER)                                                |                 |                                  |                                        |       |                        |                                                  | l                   |             |                           |              |                                         |                                         | -                                       | ļ                       |                                  |                                      |                   |                          |
| UZV-2627C      | ESD VALVE ON TANK T-4818 INLET  | WET CRUDE  | 0.927                                                  | 30~40           | 120                              |                                        |       |                        | RQ-5001                                          | BALL VALVE          | -VIRCO      | ALGAS 185-                | 40"          | 40"                                     | BALL 36"                                | CLOSE                                   | NO                      | NO                               | NO                                   |                   | UZV-2627C                |
| 021 20270      | EDD WEVE ON WHAT I TOTO MEET    | WEI ONOBE  | (0/c)                                                  | 00-10           | 120                              |                                        |       |                        | 14 0001                                          | PNEUM               |             |                           | 300 #        | FLANGED                                 | BL 00                                   | - OLOGE                                 | 110                     | 110                              | NO                                   |                   | 3637-001                 |
|                |                                 |            | 1.006                                                  |                 |                                  |                                        |       |                        |                                                  | ACTIVATOR           |             |                           | 1 1          | •                                       |                                         | 1                                       |                         |                                  |                                      |                   |                          |
|                |                                 |            | (WATER)                                                |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         |                                         |                         |                                  |                                      |                   |                          |
| UZV-2660       | CLUDGE TANK T 4907              | SLUDGE OIL |                                                        | چچ              | $\sim$                           | $\sim$                                 | ~~    | $\sim$                 | <b>~</b>                                         |                     |             | $\sim$                    | احيا         | <del>~~~</del>                          | ~~~                                     | 1000                                    | $\sim$                  | $\sim$                           | $\sim$                               | $\overline{\sim}$ | <b>****</b>              |
| UZV-200U       | SLUDGE TANK T-4807<br>INLET ESD | SLUDGE OIL | 0.93~1.0                                               | 25~50           |                                  | -                                      |       |                        | RQ-5001                                          |                     |             |                           | 6° 300#      | 6"<br>Flanged                           |                                         | CLOSE                                   |                         |                                  |                                      | 1)                | UZV-2660 )<br>2639-001 ) |
|                | INCEL COO                       |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             | ,                         | 300#         | ILANGLD                                 |                                         | 1                                       |                         |                                  |                                      |                   | 2003-001                 |
|                |                                 |            | -                                                      | ~~              | ~                                | ~~                                     | ~~    | ~~                     | ~~~                                              |                     | ~~~         | ~~~                       |              |                                         |                                         | <del></del>                             | ~~                      | ~~                               | ~                                    | ~~                |                          |
|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         |                                         |                         |                                  |                                      |                   |                          |
|                |                                 | ····       | ļ                                                      |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         | ļ                                       |                         |                                  |                                      |                   |                          |
|                |                                 |            | <u> </u>                                               |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         | ļ                                       |                         |                                  |                                      |                   |                          |
|                |                                 | REMARKS    | AND /                                                  | OR DE           | SCRIPT                           | ION OF                                 | REVIS | SIONS                  |                                                  | l                   |             |                           |              |                                         | I                                       | Sc                                      | ALE: —                  |                                  |                                      | CAD               | DRAWING                  |
| 1) PROCU       | REMENT NOT BY WPAI, HE          | NCE VENDOR | INFORM                                                 | ATION           | NOT A                            | VAILABL                                | E.    |                        |                                                  | ~~~                 | AREA        | :NIMR                     |              |                                         |                                         | 0                                       |                         | 2                                | 3 4                                  | . 5               | DRAWING                  |
| <del></del>    |                                 |            | ~~~                                                    | <del>7</del>    |                                  |                                        |       | ~~                     | ~_~                                              |                     |             |                           | LIOTIO       | AL CTATIO                               |                                         |                                         | ATPA.                   | . 1:2                            | 100                                  | ***               | 775 %                    |
|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     | SUB AREA    | :PROD                     | UCTIC        | N STATIO                                | N NO.                                   | 05                                      |                         | عمان                             | عرض                                  | ىمىيەد            | اسري                     |
|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             | TOM                       | ENICH        | NEEDING F                               | DATA SHEE                               |                                         |                         | <del></del>                      |                                      |                   | ent Oman                 |
| ļ              |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     | DRWG.TYPE   | ;IIVOI.                   | LINGII       | INLLINING L                             | AIA SHEE                                | DR                                      | MG AREA                 | ENG<br>SECT                      | SERIAL<br>NUMBER                     | SHEET             | PROJ DWG REV.            |
|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     | DESCRIPTION | ESD \                     | VALVE        | S                                       |                                         |                                         |                         | 1 1                              |                                      |                   | 0Q3A                     |
|                |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             | . —                       |              |                                         |                                         | N.                                      | אוואון כ                | י ט                              | JZ/1                                 | 300 L             |                          |
| ·              |                                 |            |                                                        |                 |                                  |                                        |       |                        |                                                  |                     |             |                           |              |                                         |                                         |                                         |                         |                                  |                                      |                   |                          |

# LIST OF ALARM AND TRIP SETTINGS

THIS COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT 'DQ' WBS No.NIM.IN.09.011

# APPROVED FOR CONSTRUCTION

| R        | EV | DATE    | BY    | CHEC  | CKED         | DESCRIPTION               | WBS No.   | PDOA       | PPROVAL   |
|----------|----|---------|-------|-------|--------------|---------------------------|-----------|------------|-----------|
|          |    |         | DRAWN | TEAML | J.ENG.       |                           |           | PROJ. ENG. | SIGNATURE |
| L        | 0  | DEC.'10 | Mrp   | PΤ    | KDA          | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    | M         |
|          | Α  | MAR.'11 | KK    | HWY   | <del>-</del> | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    |           |
| L        |    |         |       | , ,   |              |                           |           |            | t         |
| $\vdash$ |    |         |       |       | ·            |                           | <u></u>   |            | -         |

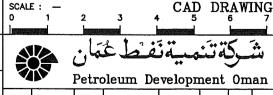
PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER

: NIMR AREA .NIMR SLUDGE PIT NO. 05

LIST OF ALARM & TRIP SETTINGS

DESCRIPTION : COVER SHEET



SHEET PROJ DWG ENG SERIAL 5 4744 001 DQ NIM



| DESCRIPTION                | SHEET  | REV 0    | REV A                                            | REV B        | REV C  | REV D    | REV E  | REV F    | REV G                |
|----------------------------|--------|----------|--------------------------------------------------|--------------|--------|----------|--------|----------|----------------------|
| COVER SHEET                | 001    | DEC.'10  | MAR.'11                                          |              |        |          |        |          |                      |
| REVISION / INDEX SHEET     | 002    | DEC.'10  | MAR.'11                                          |              |        |          |        |          |                      |
| SPARE                      | 003    |          |                                                  |              |        |          |        |          |                      |
| SPARE                      | 004    |          |                                                  |              |        | <u> </u> |        |          |                      |
| PRESSURE INSTRUMENTS       | 005    | DEC.'10  | MAR.'11                                          |              |        |          |        |          |                      |
| SPARE                      | 006    |          |                                                  |              |        |          |        |          |                      |
| SPARE                      | 007    |          |                                                  |              |        |          |        |          |                      |
| LEVEL INSTRUMENTS          | 008    | DEC.'10  | MAR.'11                                          |              |        |          |        |          |                      |
| SPARE                      | 009    |          |                                                  |              |        |          |        |          |                      |
| SPARE                      | 010    |          |                                                  |              |        |          |        |          |                      |
| TEMPERATURE INSTRUMENTS    | 011    | DEC.'10  | MAR.'11                                          |              |        |          |        |          |                      |
| SPARE                      | 012    |          |                                                  |              |        |          |        |          |                      |
| SPARE                      | 013    |          |                                                  |              |        |          |        |          |                      |
| SPARE                      | 014    |          |                                                  |              |        |          |        |          |                      |
| MISCELLANEOUS              | 015    | DEC.'10  | MAR.'11                                          |              |        |          |        |          |                      |
|                            | 016    |          |                                                  |              |        |          |        |          |                      |
|                            | 017    |          |                                                  |              |        |          |        |          |                      |
|                            | 018    |          |                                                  |              |        |          |        |          |                      |
| 1                          | 019    |          |                                                  |              |        |          |        |          |                      |
|                            | 020    |          |                                                  |              |        |          |        |          |                      |
|                            | 021    |          |                                                  |              |        |          |        |          |                      |
|                            | 022    |          |                                                  |              |        |          |        |          |                      |
|                            | 023    |          |                                                  |              |        |          |        |          |                      |
|                            | 024    |          |                                                  |              |        |          |        |          |                      |
|                            | 025    |          |                                                  |              |        |          |        |          |                      |
|                            | 026    |          |                                                  |              |        |          |        |          |                      |
|                            | 027    |          |                                                  |              |        |          |        |          |                      |
|                            | 028    |          |                                                  |              |        |          |        |          |                      |
|                            | 029    |          |                                                  |              |        |          |        |          |                      |
|                            | 030    |          |                                                  |              |        |          |        |          |                      |
|                            | 031    |          |                                                  |              |        |          |        |          |                      |
|                            | 032    |          | <del>                                     </del> |              |        |          |        |          |                      |
|                            | 033    |          | <u> </u>                                         |              |        |          |        |          |                      |
|                            | 034    |          |                                                  |              |        |          |        | -        |                      |
|                            | 035    |          |                                                  |              |        |          |        |          |                      |
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|                            | 037    |          |                                                  |              |        | 1        |        |          |                      |
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|                            | 039    |          |                                                  |              |        |          |        |          |                      |
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| area : NIMR                |        |          |                                                  | <u> </u>     |        |          |        |          |                      |
| SUB AREA : NIMR SLU        | DGE P  | IT       |                                                  | но. 05       |        |          |        | تنعية    | -                    |
| DRWG.TYPE : LIST OF A      | ALARM  | & TRII   | SET"                                             | TINGS        |        | EA ENG   | SERIAL | velopmen | DWG REV.             |
| DESCRIPTION : REVISION     | / IND  | FX SHF   | FT                                               |              | CC     | DE SECT  | NUMBER |          |                      |
| DESCRIPTION : I VE VIOIOIN | / 1110 | /\ O     |                                                  |              | NO N   | IM 5     | 4/44   | UU2 D(   | A   4   <sub>K</sub> |

| TAG NO.          |                             | TRANSMITTER  |                  | SWITC      | CH SETTING           | ADJ.           |
|------------------|-----------------------------|--------------|------------------|------------|----------------------|----------------|
| UNIT:            | SERVICE                     | RANGE        | PROCES           | SS         | TRANSMISSION         | H/L/           |
| <sup>1</sup> 48– |                             | PROCESS UNIT | UNITS            | 6          | SYSTEM UNITS         | HH/LL          |
| PDIA-1520        | DP ACROSS FILTER<br>S-48362 | 0-200 kPa    | 50 kPa           |            | 8 mA                 | Н              |
| PDIA-1521        | DP ACROSS FILTER<br>S-48363 | 0-200 kPa    | 50 kPa           |            | 8 mA                 | Н              |
| PIZA-1516        | PIPE LINE PRESSURE          | 0-6000 kPag  | 4500 k<br>4400 k | Pag<br>Pag | 16 mA<br>15.73 mA    | HH<br>H        |
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|                  |                             |              |                  |            |                      |                |
| AREA :           | NIMR                        |              | SC<br>0<br>1     | CALE :     | 2 3 4 5              | DRAWING<br>6 7 |
| SUB AREA :       | NIMR SLUDGE PIT             |              | NO. 05           |            | مية نَفنط عُمَان     | شكةت           |
| DRWG.TYPE :      | LIST OF ALARM &             | TRIP SET     | TINGS DR         | wg AREA    | Petroleum Developm   | PROJ DWG PEV   |
| DESCRIPTION :    | PRESSURE INSTRUM            | MENTS        | N                | CODE       | SECT NUMBER   37.2.7 | CODE SIZE      |
|                  |                             | 211.         |                  |            |                      |                |

| LIA-1447 SLUDGE PIT A-48307 0-2200 mm 850 mm 18.54 mA H/L  LIZA-1448 SLUDGE PIT A-48308 0-2200 mm 650 mm 18.72 mA LL  LIZA-1451 SLUDGE PIT A-48308 0-2200 mm 650 mm 18.72 mA LL  LIA-1452 SLUDGE PIT A-48308 0-2200 mm 850 mm 18.54 mA 10.18 mA H/L  LIA-1452 SLUDGE PIT A-48308 0-2200 mm 850 mm 18.54 mA 10.18 mA H/L  NOTE-  NOTE-  NOTE-  NOTE-  NOTE-  SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SAME: 0 SA | TAG NO.       |                    | TRANSMITTER  |        | SWITCH SETTING                          | ADJ.        |
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| LIA—1447 SLUDGE PIT A—48307 0—2200 mm 850 mm 18.54 mA 10.18 mA H/L  LIZA—1448 SLUDGE PIT A—48307 0—2200 mm 22000 mm 8.72 mA LL  LIZA—1451 SLUDGE PIT A—48308 0—2200 mm 650 mm 8.72 mA LL  LIA—1452 SLUDGE PIT A—48308 0—2200 mm 850 mm 10.18 mA H/L  LIA—1452 SLUDGE PIT A—48308 0—2200 mm 10.18 mA H/L  LIA—1452 SLUDGE PIT A—48308 0—2200 mm 850 mm 10.18 mA H/L  NOTE—  ASEA : NIMR  SUB AREA : NIMR SLUDGE PIT No. 0.5  DRIVE, THE STELLMENTS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | l .           | SERVICE            |              | 1      | l l                                     | H/L/        |
| MACE   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIME   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR   NIMR      | ' <u>48-</u>  |                    | PROCESS UNIT |        |                                         | HH/LL       |
| SLUDGE PIT A-48308   O-2200 mm   650 mm   8.72 mA   HI     LIA-1452   SLUDGE PIT A-48308   O-2200 mm   2000 mm   8.72 mA   HI     LIA-1452   SLUDGE PIT A-48308   O-2200 mm   2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT A-48308   O-2200 mm   850 mm   10.18 mA   H/L     LIA-1452   SLUDGE PIT A-48308   O-2200 mm   2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT A-48308   O-2200 mm   2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT A-48308   O-2200 mm   2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   18.54 mA   H/L     LIA-1452   SLUDGE PIT   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCALE   O-2000 mm   SCAL   | LIA-1447      | SLUDGE PIT A-48307 | 0-2200 mm    |        | •                                       | H/L         |
| SLUDGE PIT A-48308                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LIZA-1448     | SLUDGE PIT A-48307 | 0-2200 mm    | 650 mm | n 8.72 mA                               | 1 1         |
| NOTE—  AREA : NIMR  SUB AREA : NIMR SLUDGE PIT  NO. 05  DRWO.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWO.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWO.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWO.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWO.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWO.TYPE : LIST OF ALARM & TRIP SETTINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | LIZA-1451     | SLUDGE PIT A-48308 | 0-2200 mm    |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | LIA-1452      | SLUDGE PIT A-48308 | 0-2200 mm    |        |                                         | H/L         |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        | *************************************** |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
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| SCALE:  O 1 2 3 4 5 6 7  SUB AREA : NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |                    |              |        |                                         |             |
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| SUB AREA: NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE: LIST OF ALARM & TRIP SETTINGS  DRWG AREA CODE SECT NUMBER SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NOTE-         |                    |              |        |                                         |             |
| SUB AREA: NIMR SLUDGE PIT  NO. 05  Petroleum Development Oman  DRWG.TYPE: LIST OF ALARM & TRIP SETTINGS  DRWG AREA CODE SECT NUMBER SHEET PROJ DWG RET CODE SIZE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |                    |              | SCAL   | E: CAD                                  | DRAWING     |
| Petroleum Development Oman  DRWG.TYPE : LIST OF ALARM & TRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RET CODE SIZE  LEVEL INISTRUMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |                    |              |        | 1 2 3 4 5                               |             |
| DRWG.TYPE : LIST OF ALARM & IRIP SETTINGS  DRWG AREA ENG SERIAL SHEET PROJ DWG RE' CODE SECT NUMBER SHEET PROJ DWG RE'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                    |              |        |                                         | ent Oman    |
| DESCRIPTION : LEVEL INSTRUMENTS NO NIM 5 4744 008 DQ 4 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                    |              | INGS   | AREA ENG SERIAL SHEET P                 | ROJ DWG REV |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DESCRIPTION : | LEVEL INSTRUMEN    | N 1 S        | NO     | NIM 5 4744008 [                         | Q 4 A       |

| TAG NO.       |                                   | INSTRUMENT   |                       | I SETTING                         | ALARM                  |
|---------------|-----------------------------------|--------------|-----------------------|-----------------------------------|------------------------|
| UNIT:         | SERVICE                           | RANGE        | PROCESS               | SETPOINT                          | TYPE                   |
| 48-           |                                   | PROCESS UNIT | UNITS                 | JETI OINT                         | '''                    |
| TIA-1468      | PUMP COMMON DISCHARGE TEMPERATURE | 0-100 degC   | 25 degC               | 8 mA                              | L                      |
|               | TEM EMMONE                        |              |                       |                                   |                        |
|               |                                   |              |                       |                                   |                        |
|               |                                   |              |                       |                                   |                        |
|               |                                   |              |                       | W. Walley                         |                        |
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| AREA :        | NIMR                              |              | SCALE: 0 1 2          | CAD 1                             | DRAWING                |
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| SUB AREA :    | NIMR SLUDGE PIT                   | мо. О        |                       | تنمية تفظعة                       | •                      |
| DRWG.TYPE :   | LIST OF ALARM & TR                | IP SETTING   | $S = \overline{1}$    | roleum Developme                  |                        |
|               |                                   |              | DRWG AREA EN CODE SEC | G SERIAL SHEET PR<br>CT NUMBER CO | OJ DWG REV.<br>DE SIZE |
| DESCRIPTION : | TEMPERATURE INSTRU                | MENTS        | NO NIM 5              | 5 4744 011 D                      | 04 4                   |
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| TAG NO.       |                               | TRANSMITTER     |          | SWITCH SETTING         | ADJ.         |
|---------------|-------------------------------|-----------------|----------|------------------------|--------------|
| UNIT:         | SERVICE                       | RANGE           | PROCESS  | i                      | H/L/         |
| 48-           |                               | PROCESS UNIT    | UNITS    | SYSTEM UNITS           | HH/LL        |
| XZA-2342      | HEAT DETECTOR PUMP<br>P-48357 | NA              | 107 deg0 | NC CONTACT             | Н            |
| XZA-2343      | HEAT DETECTOR PUMP<br>P-48358 | NA              | 107 degC | NC CONTACT             | н            |
|               |                               |                 |          |                        |              |
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| NOTE:         |                               |                 |          |                        |              |
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| AREA :        | NIMR                          |                 | SCA<br>0 | LE: — CAD<br>1 2 3 4 5 | DRAWING      |
|               | NIMR SLUDGE PIT               |                 | no. 05   | نمية نَفْط عُمَان مِي  | شكة          |
| DRWG.TYPE :   | LIST OF ALARM &               | TRIP SETT       | TINGS    | Petroleum Developm     |              |
|               | MISCELLANEOUS II              |                 | DRWC     | CODE SECT NUMBER       | PROJ DWG REV |
| DESCRIPTION : | MILOCETEVIATORO II            | INO INCINICIA I | J NO     | NIM 5 4744 015 [       | DQI4 IA      |

# INSTRUMENT CABLE TERMINATION DETAILS FOR EQUIPMENT/SYSTEM CABLES COVER SHEET

### NOTES: -

- 1. E-4001 TO E-4012, E-4016 TO E-4046, E-4050 TO E-4059, E-4062 TO E-4065, E-977, E-978 & E-987 SYSTEM CABLES ASSOCIATED WITH DCS SYSTEM ONLY.
- 2. E-4070 TO E-4085, E-4094 TO E-4098, E-986 SYSTEM CABLES BETWEEN DCS & SGS.
- 3. E-4101 TO E-4180, E-4191 TO E-4199, E-976, E-979 TO E-985 SYSTEM CABLES ASSOCIATED WITH SGS SYSTEM ONLY.
- 4. E-4013 TO E-4015, E-4047, E-4060, E-4187 TO E-4190, E-975 SYSTEM CABLES ASSOCIATED WITH GFS SYSTEM ONLY.
- 5. E-4351 TO E-4353, E-4355 TO E-4358 SYSTEM CABLES BETWEEN IFB & SDE-009.
- 6. E-4185,E-4186 SYSTEM CABLES BETWEEN GFS & SGS.
- 7. E-4090 TO E-4093 SYSTEM CABLES BETWEEN GFS & DCS.

Vendor details to be provided

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

APPROVED FOR CONSTRUCTION

|     |         |       | A       |        |                           |           |            |           |
|-----|---------|-------|---------|--------|---------------------------|-----------|------------|-----------|
| Α   | MAR.'11 | KK    | Mile    | N)     | APPROVED FOR CONSTRUCTION | IN.09.011 | OSE/23N    |           |
| 0   | DEC.'10 | Mrp   | PΤ      | KDA    | ISSUED FOR COMMENTS       | IN.09.011 | OSE/23N    | IH        |
| REV | DATE    | DRAWN | TEAML.  | J.ENG. | DESCRIPTION               | WDC 11-   | PROJ. ENG. | SIGNATURE |
|     | DATE    | BY    | CHECKED |        | DESCRIP HON               | WBS No.   | PDOA       | PPROVAL   |

### PROJECT DRAWING REVISION

| IN CASE OF DEVIATIONS A | M | AKKED C | P PRINT | SHALL BE SENT TO          | ) THE PI      | KOJECT E | NGINEER |
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|                         |   |         |         |                           | ,             |          |         |
|                         | T | JUN.'07 | UMN/ASD | AS-BUILT FOR PROJECT '9W' | OT.06.001     | OSE/23N  | IH      |
|                         | S | APR.'05 |         | AS-BUILT FOR PROJECT 5X   | 02.001        |          | BW      |
|                         | R | 20°.44C |         | AS-BUILT FOR PROJ. 3Y&X4  | 00.394/95.052 |          | BW      |
|                         | Q | DEC.'04 |         | AS BUILT FOR PROJ. '5R'   | 01.116        | OSE/24N  |         |

|                                         |                                    | R    | 20°.44C |          | AS-BUILT FOR PROJ. 3Y&X4  | 00.394/95.052                        |          | BW        |
|-----------------------------------------|------------------------------------|------|---------|----------|---------------------------|--------------------------------------|----------|-----------|
| -                                       | j                                  | Q    | DEC.'04 |          | AS BUILT FOR PROJ. '5R'   | 01.116                               | OSE/24N  |           |
| *************************************** |                                    | Р    | DEC. 04 |          | AS BUILT FOR PROJ. '5V'   | IN.02.002                            |          |           |
|                                         |                                    | N    | JUNE.02 |          | AS BUILT FOR PROJECT '7G  | W.B.S No.<br>C.ON.NM.DF.02.007.12100 | OME/13   |           |
|                                         |                                    | 0    | JUNE'97 |          | AS BUILT FOR PROJECT 'L4' | 93.609                               |          |           |
|                                         | REFERENCE TO EQUIPMENT/TAG NUMBERS | REV  | DATE    | APPROVED | DESCRIPTION               | WBS No                               | PROJENG. | SPEC.ENG. |
|                                         | ARE TO BE PREFIXED BY AREA CODE    | ''-' | 57.15   | BY       | DESCRIPTION               | D.I.NO.                              | PDO AP   | PROVAL    |

NOTES/REFERENCE DRAWINGS

MASTER DRAWING REVISION

SCALE:

IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

.NIMR AREA :PRODUCTION STATION NO. 05 SUB AREA

CAD DRAWING

Petroleum Development Oman SHEET PROJ DWG REV. ENG SERIAL DRWG CODE SIZE NIM 5 5591 001 DQI 4

DRWG.TYPE

:I.C.T.D.

DESCRIPTION : COVER SHEET

| LEGEND SHEET-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                    |                                        |                                                  |          |           | _         |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
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| ### CEMBON / NOEX SHEET (001 — 032)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | DESCRIPTION                                                        |                                        | SHEE.                                            | т        | RE        | ΞV        | o         | RI           | EV 0     | RE           | / A    | RE'        | V B           | REV    | C       | REV [        | RE                                     | V E                                     |
| ### CEMBON / NOEX SHEET (001 — 032)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | COVER SHEET                                                        |                                        | 001                                              |          | 1111      | NF        | 97        | ) DI         | FC '10   | MAF          | 2 '11  |            |               |        |         |              |                                        |                                         |
| REMSION / INDEX SHEET (035 - 066) 004 REMSION / INDEX SHEET (105 - 066) 005 REMSION / INDEX SHEET (105 - 066) 005 REMSION / INDEX SHEET (129 - 160) 006 REMSION / INDEX SHEET (129 - 160) 006 REMSION / INDEX SHEET (128 - 224) 008 REMSION / INDEX SHEET (128 - 226) 009 REMSION / INDEX SHEET (128 - 226) 009 REMSION / INDEX SHEET (227 - 228) 010 REMSION / INDEX SHEET (227 - 228) 010 REMSION / INDEX SHEET (227 - 228) 010 REMSION / INDEX SHEET (227 - 228) 010 REMSION / INDEX SHEET (227 - 228) 010 REMSION / INDEX SHEET (231 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (227 - 228) 010 REMSION / INDEX SHEET (228 - 320) 011 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351) 012 REMSION / INDEX SHEET (321 - 351 |                                                                    | 332)                                   | <del> </del>                                     |          | 1         | Ť         | J         | <del></del>  |          | <del> </del> |        |            |               |        |         |              | +                                      |                                         |
| REMSION / INDEX SHEET (1965 - 196) 005 REMSION / INDEX SHEET (1966 - 128) 005 REMSION / INDEX SHEET (1967 - 160) 006 REMSION / INDEX SHEET (1967 - 160) 006 REMSION / INDEX SHEET (1972 - 224) 007 REMSION / INDEX SHEET (193 - 224) 008 REMSION / INDEX SHEET (193 - 224) 008 REMSION / INDEX SHEET (257 - 288) 010 REMSION / INDEX SHEET (257 - 288) 010 REMSION / INDEX SHEET (257 - 288) 010 REMSION / INDEX SHEET (257 - 288) 010 REMSION / INDEX SHEET (257 - 288) 010 REMSION / INDEX SHEET (321 - 351) 012 RADKOR BOARD INTERCONN. DETAILS 013 JUNE 97 LEGERO SHEET-2 015 LEGERO SHEET-2 016 LEGERO SHEET-2 017 LEGERO SHEET-2 019 LEGERO SHEET-2 019 LEGERO SHEET (321 - 351) 012 LEGERO SHEET (321 - 351) 014 LEGERO SHEET (321 - 351) 015 LEGERO SHEET (321 - 351) 015 LEGERO SHEET (321 - 351) 016 LEGERO SHEET (321 - 351) 017 LEGERO SHEET (321 - 351) 018 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHET (321 - 351) 019 LEGERO SHEET (321 - 351) 019 LEGERO SHEET (321 |                                                                    | ······································ | ·                                                |          | T         | $\dagger$ | T         |              | Ü        |              |        |            |               | ~      |         |              |                                        |                                         |
| REVISION / INDEX SHEET (192 – 160) 005  REMISION / NDEX SHEET (182 – 160) 005  REMISION / NDEX SHEET (181 – 192) 007  REMISION / NDEX SHEET (193 – 224) 008  REMISION / INDEX SHEET (193 – 224) 008  REMISION / INDEX SHEET (285 – 258) 009  REMISION / INDEX SHEET (285 – 288) 010  REMISION / INDEX SHEET (282 – 289) 010  REMISION / NDEX SHEET (283 – 320) 011  REMISION / NDEX SHEET (283 – 320) 012  REMISION / NDEX SHEET (283 – 320) 012  REMISION / NDEX SHEET (284 – 320) 011  REMISION / NDEX SHEET (286 – 320) 012  REMISION / NDEX SHEET (287 – 288) 010  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 012  REMISION / NDEX SHEET (288 – 320) 012  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (288 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / NDEX SHEET (289 – 320) 011  REMISION / ND |                                                                    |                                        |                                                  |          | $\dagger$ | T         | $\exists$ | 1            |          |              |        |            |               |        |         |              |                                        |                                         |
| REMSION / MDEX SHEET (129 – 160) 006  REMSION / MDEX SHEET (181 – 192) 007  REMSION / MDEX SHEET (183 – 224) 008  REMSION / MDEX SHEET (257 – 258) 009  REMSION / MDEX SHEET (257 – 258) 009  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 280) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) 010  REMSION / MDEX SHEET (257 – 288) |                                                                    |                                        | <del>                                     </del> |          |           | 1         |           | Ď            | EC. 10   | MAF          | ₹. 11  |            |               |        |         |              |                                        |                                         |
| REVISION / INDEX SHEET (161 — 192) 007  REMISION / NDEX SHEET (193 — 224) 008  REVISION / NDEX SHEET (257 — 288) 010  REVISION / INDEX SHEET (257 — 288) 010  REVISION / INDEX SHEET (281 — 320) 011  REMISION / INDEX SHEET (281 — 320) 011  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (281 — 351) 012  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION / INDEX SHEET (280 — 320) 011  REMISION |                                                                    |                                        | <del> </del>                                     |          |           | T         |           | D            | EC.'10   | MAF          | ₹.'11  |            |               |        |         |              |                                        | 1                                       |
| REMISION / INDEX SHEET (193 — 224) 008  REMISION / INDEX SHEET (225 — 258) 009  REMISION / INDEX SHEET (225 — 258) 009  REMISION / INDEX SHEET (288 — 320) 011  REMISION / INDEX SHEET (321 — 351) 012  RADIKOR BOARD INTERCONN. DETAILS 013 JUNE 97  LEGEND SHEET—1 014  LEGEND SHEET—2 015  E—4001 018  E—4002 017  —4003 018  E—4006 021  SPARE 022  SPARE 023  SPARE 023  SPARE 023  SPARE 023  SPARE 023  SPARE 023  SPARE 025  SPARE 026  E—4010 026  E—4011 026  E—4010 026  E—4011 026  E—4011 026  E—4015 033  E—4016 031  E—4017 032  REMISION / INDEX SHEET (194 OT 1.06.001 OSE/23N INTERCONN. DETAILS ON THE PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  BW  ASS-BULLT FOR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  BW  ASS-BULLT FOR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK OZ. Q.0.01  REMISION / INDEX SHEET (194 OR PROJECT SK O |                                                                    |                                        | 007                                              |          | 1         |           | $\top$    |              |          |              |        |            |               |        |         |              |                                        |                                         |
| REVISION / INDEX SHEET (225 – 288) 010                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                    |                                        | 008                                              |          |           |           | T         |              |          |              |        |            |               |        |         |              |                                        |                                         |
| REMISION / INDEX SHEET (288 – 320) 011  REMISION / INDEX SHEET (321 – 351) 012  LEGEND SHEET—1  LEGEND SHEET—1  O14  LEGEND SHEET—2  O15  E-4001  C-4002  O17  -4003  O18  C-4005  C-4006  O21  SPARE  O22  SPARE  O22  SPARE  O23  SPARE  O22  SPARE  O23  SPARE  O24  JANE 97  C-4011  O26  C-4011  O26  C-4011  O26  C-4014  O29  C-4014  O29  C-4015  C-4017  O32  TANIOT UMN/ASD AS-BUILT FOR PROJECT SW O1.06.001 OSE/23N IH- SPARE O1.05  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR. O5  S APR.  |                                                                    |                                        | 009                                              |          |           |           | T         |              |          |              |        |            |               |        |         |              |                                        |                                         |
| REVISION / INDEX SHEET (321 - 351) 012  RADIKOR BOARD INTERCONN. DETAILS 013 JUNE 97  LEGEND SHEET-1 014  LEGEND SHEET-2 015  E-4001 016  E-4002 017 4003 018 4004 019  E-4005 020  E-4006 021  SPARE 022  SPARE 022  SPARE 023  SPARE 022  SPARE 023  SPARE 024  SPARE 025  E-4010 025  E-4011 025  E-4011 025  E-4011 025  E-4015 030  E-4014 029  E-4015 030  E-4017 031  NO DEC. 04  AS-BULLT FOR PROJECT 'SW   01.06.001   0SE/23N   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0.00   HT   0       | REVISION / INDEX SHEET (257 - 2                                    | 288)                                   | 010                                              |          |           | 1         | Γ         |              |          |              |        |            |               |        |         |              |                                        |                                         |
| RADIKOR BOARD INTERCONN. DETAILS 013 JUNE 97  LEGEND SHEET—1  LEGEND SHEET—2  E-4001  O16  E-4002  O17  O18  E-4003  O18  E-4004  O19  E-4005  E-4006  O21  F-4006  O22  SPARE  O22  SPARE  O23  SPARE  O24  SPARE  O25  SPARE  O27  SPARE  O28  SPARE  O29  O21  F-4010  C-4011  O25  E-4011  O26  E-4012  C-4013  O28  E-4014  O29  SE-4015  C-4015  C-4016  O31  SAPR. O5  SAPR. O5  AS-BULLT FOR PROJECT 'SK OJ. JAKAN JOSEN'S BW OJ. JAKAN JOS. SPARE  O JUNE 97  SAPR. O5  AS-BULLT FOR PROJECT 'SK OJ. JAKAN JOS. SPARE JOS. JAKAN JOS. SPARE JOS. JAKAN JOS. JAKAN JOS. SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPECEDIO. TO SPEC | REVISION / INDEX SHEET (288 - 3                                    | 320)                                   | 011                                              |          |           |           |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| LEGEND SHEET-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | REVISION / INDEX SHEET (321 - 3                                    | 351)                                   | 012                                              |          |           | Π         |           |              |          |              | -      |            |               |        |         |              |                                        |                                         |
| LEGEND SHEET-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RADIKOR BOARD INTERCONN. DETAI                                     | ILS                                    | 013                                              |          | JU        | NE        | 97        | ,            |          |              |        |            |               |        |         |              |                                        | ,                                       |
| E-4001 E-4002 1017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LEGEND SHEET-1                                                     |                                        | 014                                              |          |           | V         |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4001 E-4002 1017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LEGEND SHEET-2                                                     |                                        | 015                                              |          |           | 1         |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| 4003400440054006400640064006400640064006400840094009400940104010401140124011401240134014401340144015401440154016401540164017401640174018401740184019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | E-4001                                                             |                                        | 016                                              |          |           |           |           |              |          |              |        |            |               |        |         |              | $\top$                                 |                                         |
| 4003400440054006400640064006400640064006400840094009400940104010401140124011401240134014401340144015401440154016401540164017401640174018401740184019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019401940194019                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | E-4002                                                             |                                        | 017                                              |          |           | 1         |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4004 E-4005 E-4006 DE-006 DE-006 DE-007 DESARE DE-4010 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 DEC-10 D |                                                                    |                                        | 018                                              |          |           | 711       |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4005 E-4006 SPARE 022 SPARE 023 E-4009 024 JUNE 97 E-4010 E-4011 026 E-4013 028 E-4014 029 E-4015 E-4015 030 E-4016 E-4017 SAPR. 05 AS-BULT FOR PROJECT 'SK' 02,004 BW REFERENCE TO EQUIPMENTAG NUMBERS ARE TO BE_PRETIZED BY AREA CODE REV DATE BY ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04 ASSENDED FOR PROJECT 'SK' OF DEC.04  | £-4004                                                             |                                        | 1                                                |          |           | 111       |           | 1            |          |              |        |            |               |        |         |              | 1                                      |                                         |
| E-4006   O21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | E-4005                                                             |                                        | +                                                |          |           | $\prod$   |           |              |          |              |        |            | ******        |        |         |              |                                        |                                         |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | E-4006                                                             |                                        | 021                                              |          |           | 1         |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| SPARE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SPARE                                                              |                                        | 022                                              |          |           |           | 1         |              |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4010 E-4011 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DEC.10 MAR.11 DE | SPARE                                                              |                                        | 023                                              |          | П         |           | 1         |              |          |              |        |            |               |        |         |              |                                        | *************************************** |
| E-4011  E-4012  E-4013  E-4013  E-4014  E-4015  E-4016  E-4017  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MAR. 11  DEC. 10 MA | E-4009                                                             |                                        | 024                                              |          | JU        | ΝĘ        | 97        | 7            |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4013  6-4014  6-4015  6-4016  6-4017   T JUN'07 UMN/ASD AS-BUILT FOR PROJECT '9W OT.06.001 OSE/23N HT  S APR. '05  R JAN. '05  R JAN. '05  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/24N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/24N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.116 OSE/24N BW  P DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  Q DEC.04  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.001 OSE/23N BW  AS-BUILT FOR PROJECT 'SW OT.06.00 | E-4010                                                             |                                        | 025                                              |          | П         |           | 1         |              |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4013  E-4014  E-4015  E-4016  E-4017  DRINGTYPE  E-4017  DRINGTYPE  E-4018  DRINGTYPE  E-4018  DRINGTYPE  E-4019  DRINGTYPE  E-4019  DRINGTYPE  E-4019  DRINGTYPE  E-4019  DRINGTYPE  E-4019  DRINGTYPE  E-4019  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE  DRINGTYPE | E-4011                                                             |                                        | 026                                              |          | П         |           | 7         |              |          |              |        |            |               |        | _       |              |                                        |                                         |
| E-4015 E-4016 E-4017  DRING, TYPE  E-4018  DRING, TYPE  E-4017  DRING, TYPE  E-4016  DOS  DRING, TYPE  E-4016  DOS  DOS  DOS  DOS  DOS  DOS  DOS  DO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | E-4012                                                             |                                        | 027                                              |          | П         | T         |           | D            | EC.'10   | MAF          | ₹.'11  |            |               |        |         |              |                                        |                                         |
| E-4016  E-4017  D32    T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | E-4013                                                             |                                        | 028                                              |          | П         |           |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4017  032  T JUN'07 UMN/ASD AS-BUILT FOR PROJECT '9W' OT.06.001 OSE/23N JH S APR.'05 AS-BUILT FOR PROJECT 5X O2_001 BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S APR.'05 AS-BUILT FOR PROJECT 5X O2_001 BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S APR.'05 AS-BUILT FOR PROJECT 5X O2_001 BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH S BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OSE/23N JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 OS.06.001 JH D BW R JAN.'05 AS-BUILT FOR PROJECT '5W' OT.06.001 J | E-4014                                                             |                                        | 029                                              |          |           | T         |           | $\prod$      |          |              |        |            |               |        |         |              |                                        |                                         |
| E-4017  032    JUN'07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | E-4015                                                             |                                        | 030                                              |          |           |           |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
| REFERENCE TO BE PREFIXED BY AREA CODE  NOTES/REFERENCE DRAWINGS  IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE  REVISION (INDEX SHEET)  O LUNION (INDEX SHEET)  REVISION (INDEX SHEET)  AS-BUILT FOR PROJECT '9W OT.06.001 OSE/23N HT OSE/24N BW  AS-BUILT FOR PROJECT 5X 02.001 BW  AS-BUILT FOR PROJECT '5X' 01.116 OSE/24N PD DESCRIPTION BW  AS-BUILT FOR PROJECT '5X' N.02.002 TTP/57 AS-BUILT FOR PROJECT '5X' N.02.002 TTP/57 AS-BUILT FOR PROJECT '14' 93:609 PROJECT SHELL FOR PROJECT '14' 93:609 PROJECT SHELL FOR PROJECT '14' 93:609 PROJECT SHELL FOR PROJECT '14' 93:609 PROJECT SHELL FOR PROJECT '14' 93:609 PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJECT SHELL FOR PROJE | E-4016                                                             |                                        | 031                                              |          |           |           |           |              | -        |              |        |            |               |        |         |              |                                        |                                         |
| S APR. 05  R JAN. 05  R JAN. 05  R JAN. 05  R JAN. 05  R JAN. 05  R JAN. 05  AS-BUILT FOR PROJECT 5X  O 3.94/95.052  BW  O DEC. 04  P DEC. 04  P DEC. 04  AS-BUILT FOR PROJECT '5R'  O 1.116  OSE /24N  P DEC. 04  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  ITP /57  AS-BUILT FOR PROJECT '5R'  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.002  IN. 02.0 | E-4017                                                             |                                        | 032                                              |          |           | ¥         |           |              |          |              |        |            |               |        |         |              |                                        |                                         |
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| NOTES/REFERENCE DRAWINGS  IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE  SCALE:  O 1 2 3 4 5 6  SUB AREA: PRODUCTION STATION  NO. 05  DRWG.TYPE: I. C. T. D.  DRWG.TYPE: I. C. T. D.  DRWG.TYPE SHEET PROJUCTION SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION  DRWG.TYPE SHEET PROJUCTION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATION STATI |                                                                    | 1070                                   | UNE 97                                           |          |           |           | _         | AS-          | BUILT FO | OR PRO       | DJECT  | `L4'       |               |        | _       |              |                                        |                                         |
| NOTES/REFERENCE DRAWINGS  IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE  AREA :NIMR  SUB AREA :PRODUCTION STATION  NO. 05  Petroleum Development Omar  DRWG.TYPE :I.C.T.D.  DRWG AREA ENG SERIAL SHEET PROJ DWG RE  CODE SIZE RE  REVISION (INDEX SHEET)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | REFERENCE TO EQUIPMENT/TAG NUMBERS ARE TO BE PREFIXED BY AREA CODE | REV                                    | DATE                                             | AF       |           |           | ,         |              | DES      | CRIPTIC      | ON     |            | MR2           | NO.    | PF      |              | ــــــــــــــــــــــــــــــــــــــ |                                         |
| IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE  SCALE:  O 1 2 3 4 5 6  SCALE:  O 1 2 3 4 5 6  Petroleum Development Omar  DRWG.TYPE:  ORWG.TYPE:  ORWG.TYPE:  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE  ORWG.TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                        |                                                  |          |           |           | ᆜ         | <u> </u>     |          |              |        |            |               |        | <u></u> | PDO AF       | PROVAL                                 | $\geq$                                  |
| SCALE: O 1 2 3 4 5 6  SUB AREA : PRODUCTION STATION  NO. 05  Petroleum Development Omar  DRWG.TYPE : I. C. T. D.  DRWG AREA ENG SERIAL SHEET PROJ DWG RE CODE SECT NUMBER SHEET PROJ DWG RE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | •                                                                  |                                        |                                                  | - T      |           | m         |           |              |          |              |        |            |               |        |         | Tatal        |                                        |                                         |
| SUB AREA : PRODUCTION STATION  NO. 05  Petroleum Development Omar  DRWG.TYPE : I. C. T. D.  DRWG AREA CODE SECT NUMBER SHEET PROJ DWG RE CODE SIZE RE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | IN CASE OF DEVIATIONS I                                            | MARK                                   | ED OP                                            | Ph       | CIN       | T         | 16        | TAL          | T BE     |              |        | 10         | COA           | ASTA   |         |              |                                        |                                         |
| Petroleum Development Omar  DRWG.TYPE :   . C . T . D .  DRWG AREA CODE SECT NUMBER SHEET PROJ DWG RE CODE SIZE RE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | area :NIMR                                                         |                                        |                                                  |          |           |           |           |              |          | 1            |        |            | 2             | 3      | 4       | CAD          |                                        | VINC                                    |
| Petroleum Development Omar  DRWG.TYPE :   . C . T . D .  DRWG AREA CODE SECT NUMBER SHEET PROJ DWG RE CODE SIZE RE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                    |                                        | - A TION                                         |          |           |           |           | \_\          | . 05     |              |        |            | كمار          | تطا    | نَف     | نمنة         | بكةت                                   | ش                                       |
| PEVISION /INDEX SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SUB AREA PRODUCTION                                                | ST                                     | AHON                                             | <b>Y</b> |           |           |           |              |          |              |        | <b>→ b</b> |               |        |         |              |                                        |                                         |
| PEVISION /INDEX SHEET                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | SUB AREA :PRODUCTION                                               | ST                                     | AHON                                             | _        |           |           |           | 1.00         | J. 00    | <b>₹</b>     | が      | F          | etro]         | leum   | Dev     | zelopme      | ent 0:                                 | man                                     |
| , 171117 C CCC, CC2 D W 177                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                    | ST                                     | AHON                                             |          |           |           |           | 1."          | <i></i>  | DRWG         |        | EA         | ENG           | SERIAL | . T     | SHEET P      | ROJ DW                                 | G RE                                    |

| DESCRIPTION                                                        | SHEE     | T REV C        | REV M                                             | REV P                                             | REV Q                                             | REV ]                                             | REV O                                            | REV A               |
|--------------------------------------------------------------------|----------|----------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------------------------|---------------------|
| E-4082                                                             | 097      | JUNE 9         | 7                                                 | -                                                 |                                                   | <del>                                     </del>  |                                                  |                     |
| £–4082<br>≟–4083                                                   | 097      | 1 ONE 3        | 1                                                 | <del> </del>                                      |                                                   | <del>                                     </del>  |                                                  |                     |
| E-4084                                                             | 099      | <del></del>    |                                                   |                                                   |                                                   | <del>  /                                   </del> |                                                  |                     |
| E-4085                                                             | 100      |                |                                                   |                                                   |                                                   | <del>  /</del>                                    |                                                  |                     |
| SPARE                                                              | 101      |                | 4                                                 |                                                   |                                                   | /                                                 |                                                  |                     |
| SPARE                                                              | 101      |                | <del>\</del>                                      |                                                   | <del>                                     </del>  | <del></del>                                       |                                                  |                     |
| SPARE                                                              | 103      |                | +\                                                |                                                   | <del>                                     </del>  |                                                   |                                                  |                     |
| SPARE                                                              | 103      |                | +                                                 |                                                   | <del>                                     </del>  |                                                   |                                                  |                     |
| ==4090 (CANCELLED UNDER PROJ. '5                                   |          | JUNE 9         | 7                                                 |                                                   | DEQ.'04                                           |                                                   |                                                  |                     |
| E-4091                                                             | 106      | TOONE 3        | 1                                                 |                                                   | 7                                                 |                                                   |                                                  |                     |
| E-4092                                                             | 107      |                | +                                                 |                                                   | <del>  /</del>                                    | <del>                                     </del>  | -                                                | +                   |
|                                                                    |          | SEP'00         | MAR'02                                            | <del> </del>                                      | DEC.'04                                           |                                                   |                                                  |                     |
| E-4093                                                             | 108      |                |                                                   | $\wedge$                                          | 1 000.04                                          | JUN.'07                                           | 7                                                |                     |
| E-4094                                                             | 109      | JUNE 9         | 1                                                 | <del>                                     </del>  |                                                   | 30N. 07                                           | <u>′                                    </u>     |                     |
| E-4095                                                             | 110      |                |                                                   | $+ \setminus /-$                                  |                                                   |                                                   |                                                  |                     |
| E-4096                                                             | 111      |                | -                                                 | +X                                                |                                                   | <del>  </del>                                     |                                                  |                     |
| E-4097                                                             | 112      |                |                                                   | <del>  / \</del>                                  |                                                   | <del>}                                    </del>  | <del>                                     </del> | <del> </del>        |
| E-4098                                                             | 113      | <u> </u>       |                                                   | <del>  /                                   </del> |                                                   | *                                                 |                                                  |                     |
| PARE                                                               | 114      |                |                                                   | <b>/</b>                                          | <del></del>                                       | <del> </del>                                      | -                                                |                     |
| SPARE                                                              | 115      |                | /                                                 | 1                                                 | <u> </u>                                          | <del></del>                                       |                                                  |                     |
| E-4101                                                             | 116      | JUNE 9         | 7 /                                               |                                                   | +\                                                |                                                   |                                                  |                     |
| E-4102                                                             | 117      |                | <del>                                     </del>  | <u> </u>                                          | <del>  \                                   </del> | <u> </u>                                          | _                                                |                     |
| E-4103                                                             | 118      |                | <del>                                     </del>  |                                                   | $\vdash$                                          | ļ                                                 |                                                  |                     |
| E-4104                                                             | 119      |                | <del>  /                                   </del> |                                                   | +-                                                |                                                   |                                                  |                     |
| E-4105                                                             | 120      |                | 1/                                                |                                                   | <u> </u>                                          |                                                   |                                                  |                     |
| E-4106                                                             | 121      |                | <i>_</i> /                                        |                                                   | <del>                                     </del>  |                                                   |                                                  |                     |
| E-4107                                                             | 122      |                | A                                                 | ļ                                                 |                                                   | <u> </u>                                          |                                                  |                     |
| E-4108                                                             | 123      |                | <u> </u>                                          |                                                   |                                                   | <u> </u>                                          |                                                  |                     |
| E-0986                                                             | 124      | /_             |                                                   |                                                   |                                                   | ט'יאטר.                                           | 7                                                |                     |
| SPARE                                                              | 125      | /              |                                                   |                                                   |                                                   |                                                   |                                                  |                     |
| SPARE                                                              | 126      | /              |                                                   |                                                   |                                                   | $\longrightarrow$                                 |                                                  |                     |
| SPARE                                                              | 127      | /              |                                                   |                                                   |                                                   |                                                   |                                                  |                     |
| E-4113                                                             | 128      | JUNE 9         | 7                                                 | DEC' 04                                           |                                                   | <u> </u>                                          | DEC.'10                                          | ) MAR. 11           |
|                                                                    |          | ,              |                                                   |                                                   |                                                   |                                                   |                                                  |                     |
| T                                                                  | JUN.'07  | UMN/ASD        | AS-BUILT F                                        |                                                   |                                                   |                                                   | DSE/23N                                          |                     |
| Q                                                                  | DEC'04   |                | <del> </del>                                      | OR PROJECT                                        |                                                   |                                                   | SE/24N                                           | ******              |
| P                                                                  | DEC'04   |                | AS BUILT FO                                       |                                                   |                                                   |                                                   | TTP/57                                           | W                   |
| M                                                                  | MAR'02   |                | AS BUILT                                          |                                                   |                                                   |                                                   | OME/41                                           | JAMAL               |
| 0                                                                  | JUNE'97  |                | AS BUILT FOR I                                    | PROJECT 'L4'                                      | 93                                                | 3.609                                             |                                                  |                     |
| REFERENCE TO EQUIPMENT/TAG NUMBERS ARE TO BE PREFIXED BY AREA CODE | DATE     | APPROVED<br>BY | DES                                               | CRIPTION                                          | B.I                                               | .NO                                               | PROJ.ENG. PDO API                                | SPEC.ENG.<br>PROVAL |
| NOTES/REFERENCE DRAWINGS                                           |          |                | MASTER                                            | DRAWING                                           | REVISI                                            | ON                                                |                                                  |                     |
| IN CASE OF DEVIATIONS MA                                           | RKED UP  | PRINT S        | HALL BE                                           | SENT                                              | TO CO                                             | ASTAL                                             | DESIGN                                           | OFFICE              |
|                                                                    |          |                |                                                   | SCALE :                                           | 1000                                              |                                                   |                                                  | DRAWING             |
| AREA : NIMR                                                        |          |                |                                                   | 0 1                                               | 2                                                 | 3                                                 | 4 5                                              | 6 7                 |
| SUB AREA :PRODUCTION S                                             | OITAT    | 1              | No. 05                                            |                                                   | ئمَان 🖈                                           | فط                                                | تنميةت                                           | شكة                 |
|                                                                    |          |                |                                                   |                                                   | Petro                                             | leum D                                            | evelopme                                         | nt Oman             |
| DRWG.TYPE : I.C.T.D.                                               |          |                |                                                   | DRWG AF                                           | REA ENG                                           | SERIAL                                            | <del></del>                                      | ROJ DWG REV         |
| DEVICION ANDE                                                      | X SHE    | FT             |                                                   | CC CC                                             | DDE SECT                                          | NUMBER                                            |                                                  | DE SIZE             |
| DESCRIPTION : REVISION/INDE                                        | -/\ JIIL | <b>L</b>       |                                                   | NO NI                                             | M 5                                               | 5591                                              | 005 D                                            | Q 4 A               |
| Waylow Paragna Archiga In                                          |          |                |                                                   |                                                   |                                                   |                                                   |                                                  |                     |

| DESCRIPTION | SHEET | KEN 0   | REV H   | REV J       | REV P  | REV 0   | REV A   |
|-------------|-------|---------|---------|-------------|--------|---------|---------|
| E-4114      | 129   | JUNE 97 | JUNE 00 | JULY'00     | /      |         |         |
| E-4115      | 130   |         |         |             | /      |         |         |
| E-4116      | 131   | OCT 02  |         |             | DEC/04 |         |         |
| E-4117      | 132   | JUNE 97 |         |             | /      |         |         |
| E-4118      | 133   |         |         |             | /      |         |         |
| E-4119      | 134   | 7       |         |             | /      |         |         |
| E-4120      | 135   |         |         |             |        |         |         |
| E-4121      | 136   |         | \       |             |        |         |         |
| E-4122      | 137   |         |         | /           | 4      | DEC.'10 | MAR. 11 |
| E-4123      | 138   |         |         |             |        |         |         |
| SPARE       | 139   |         |         | /           |        |         |         |
| SPARE       | 140   |         |         | /           |        |         |         |
| SPARE       | 141   |         |         | /           |        |         |         |
| SPARE       | 142   |         |         | /           |        |         |         |
| E-4128      | 143   | JUNE 97 | /       | JULY'00     |        |         |         |
| E-4129      | 144   |         | /       | \           |        |         |         |
| E-4130      | 145   |         | 1       | $\setminus$ |        |         |         |
| E-4131      | 146   |         |         | \           |        |         |         |
| E-4132      | 147   |         |         |             |        |         |         |
| E-4133      | 148   |         | /       | JULY,00     |        |         |         |
| SPARE       | 149   |         | /       |             |        |         |         |
| SPARE       | 150   |         | 7       |             |        |         |         |
| E-4136      | 151   | JUNE 97 | /       | JULY'00     |        |         |         |
| E-4137      | 152   |         |         | \           |        |         |         |
| E-4138      | 153   |         |         |             | \      |         |         |
| E-4139      | 154   |         |         |             |        |         |         |
| E-4140      | 155   |         |         | JULY'00     |        |         |         |
| E-4141      | 156   |         |         |             |        |         |         |
| SPARE       | 157   |         |         |             |        |         |         |
| SPARE       | 158   | 1       |         |             |        |         |         |
| E-4144      | 159   | JUNE 97 |         |             |        |         |         |
| E-4145      | 160   | / 1     |         |             |        |         |         |

| P    | DE6'04      |                                |        |       | AS BUILT   | FOF                                               | R PROJ | ECT '5V'  |          |       | IN.C  | 2.002    | TTP/57         | <u>'</u> |               |      |
|------|-------------|--------------------------------|--------|-------|------------|---------------------------------------------------|--------|-----------|----------|-------|-------|----------|----------------|----------|---------------|------|
| J    | JULY,00     | DVd                            |        |       | AS BUILT F | BUILT FOR PROJ. 2Z,7G & UPTO JUL'00 OO_826 ONE/23 |        |           |          |       |       |          |                |          |               |      |
| 0    | JUNE 97     | AJAY                           |        |       | AS BUILT   | BUILT FOR PROJECT L4 93.609                       |        |           |          |       |       |          |                |          |               |      |
| REV  | DATE        | DRAWN                          |        |       |            | DESCRIPTION B.I. NO. SIG                          |        |           |          |       |       |          |                | GNATL    | JRE           |      |
|      |             | BY                             | CHE    | CKED  |            |                                                   | DESCI  | WI HOW    | _        |       |       | S No     | PDO            | APPR     | DVAL          |      |
|      |             |                                |        |       | MA         | ASTE                                              | R DRAV | WING REVI | SION     |       |       |          |                |          |               |      |
| IN   | CASE (      | F DEV                          | [ATIO] | NS A  | MARKED     | UP                                                | PRINT  | SHALL E   | BE S     | ENT I | O T   | HE PRO   | DJECT          | ENG      | HNE           | ER   |
|      |             | NIMR                           |        |       |            |                                                   |        |           | SCAL     | E:    | ,     | 7        | CAD            | DR       | AWI           | NĢ   |
| AR   | EA :        | INTIVITY                       |        |       |            |                                                   |        |           |          |       |       | 3        | 4 5            |          | ь<br><b>Б</b> |      |
|      |             |                                | LICT   | ION   | STATIC     | 187                                               |        | 25        | 4        |       | تماء  | دُ الْحُ | 7 ++<br>2 4 ml | • ** **  | <             | *    |
| SU   | B AREA :    | FNOD                           | 001    | ION   | STATIC     | // V                                              |        | но. 05    |          |       | U~    |          | **             |          |               |      |
|      |             |                                |        |       |            |                                                   |        |           | <b>V</b> |       | Petro | leum D   | evelopn        | nent     | 0m            | an   |
| DR   | WG.TYPE :   | ICTD                           |        |       |            |                                                   |        |           | DRWG     | AREA  | ENG   | SERIAL   | SHEET          | PROJ     | DWG           | REV. |
|      |             | סבעוכ                          | ·IONI  | /INIT | YEV CHI    |                                                   | _      |           |          | CODE  | SECT  | NUMBER   | -              | CODE     | SIZE          |      |
| l DE | SCRIPTION : | CRIPTION :REVISION/INDEX SHEET |        |       |            |                                                   |        |           | NO       | NIM   | 5     | 5591     | 006            | DQ       | 4             | Α    |
|      |             |                                |        |       |            |                                                   |        |           |          |       |       |          |                |          |               |      |

| SYSTEM C            | CABLE AND | BOARD   |       |    |         |         |              |
|---------------------|-----------|---------|-------|----|---------|---------|--------------|
| TAG<br>NUMBER<br>48 | NUMBER    | SIZE    | TML'S |    | FROM    | ТО      | CONNECTED TO |
| GBS-791 O           | E-4012    | EM56/54 | 01    | 02 | SDE-002 | DCS-009 |              |
| GBS-791 C           | E-4012    | EM56/54 | 03    | 04 | SDE-002 | DCS-009 |              |
| GBS-792 0           | E-4012    | EM56/54 | 05    | 06 | SDE-002 | DCS-009 |              |
| GBS-792 C           | E-4012    | EM56/54 | 07    | 08 | SDE-002 | DCS-009 |              |
| GBS-793 O           | E-4012    | EM56/54 | 09    | 10 | SDE-002 | DCS-009 |              |
| GBS-793 C           | E-4012    | EM56/54 | 11    | 12 | SDE-002 | DCS-009 |              |
| GBS-794 O           | E-4012    | EM56/54 | 13    | 14 | SDE-002 | DCS-009 |              |
| GBS-794 C           | E-4012    | EM56/54 | 15    | 16 | SDE-002 | DCS-009 |              |
| SPARE               |           |         | 17    | 18 |         |         |              |
| GBS-2660(Ö)         | E-4012    | EM56/54 | 19    | 20 | SDE-002 | DCS-009 | NOTE-1       |
| GBS-2660(C)         | E-4012    | EM56/54 | 21    | 22 | SDE-002 | DCS-009 | NOTE-1       |
| SPARE               |           |         | 23    | 24 |         |         |              |
| SPARE               |           |         | 25    | 26 |         |         |              |
| SPARE               |           |         | 27    | 28 |         |         |              |
| SPARE               |           |         | 29    | 30 |         |         |              |
| SPARE               |           |         | 31    | 32 |         |         |              |
| SPARE               |           |         | 33    | 34 |         |         |              |
| SPARE               |           |         | 35    | 36 |         |         |              |
| SPARE               |           |         | 37    | 38 |         |         |              |
| SPARE               |           |         | 39    | 40 |         |         |              |
| SPARE               |           |         | 41    | 42 |         |         |              |
| SPARE               |           |         | 43    | 44 |         |         |              |
| SPARE               |           |         | 45    | 46 |         |         |              |
| SPARE               |           |         | 47    | 48 |         |         |              |
| SPARE               |           |         | 49    | 50 |         |         |              |
| SPARE               |           |         | 51    | 52 |         |         |              |
| SPARE               |           |         | 53    | 54 |         |         |              |

# NOTE-1 SYSTEM DETAILS AWAITED

M3TYPE54 .NIMR AREA .PRODUCTION STATION SUB AREA NO. 05 Petroleum Development Oman :ICTD DRWG.TYPE AREA CODE ENG SECT SERIAL NUMBER SHEET PROJ DWG SIZE DRWG REV. :E-4012 DESCRIPTION 5 NIM 5591 027 DQ 4 NO

| SYSTEM C            | ABLE AND |            |    |     |         |          |                   |
|---------------------|----------|------------|----|-----|---------|----------|-------------------|
| TAG<br>NUMBER<br>48 | NUMBER   | SIZE TML'S |    | ĽS. | FROM    | ТО       | CONNECTED TO      |
| PZA-059             | E-4113   | EM56/54    | 01 | 02  | SDE-002 | SGS-004B | 4B-7A, 5F+,5F-    |
| PZA-060             | E-4113   | EM56/54    | 03 | 04  | SDE-002 | SGS-004B | 4B-7A, 16F+,16F-  |
| HS-472 RS           | E-4113   | EM56/54    | 05 | 06  | SDE-002 | SGS-004B | 4B-6A, 22F+,22F-  |
| HS-028 RS           | E-4113   | EM56/54    | 07 | 80  | SDE-002 | SGS-004B | 4B-3A, 5F+,5F-    |
| PZA-105             | E-4113   | EM56/54    | 09 | 10  | SDE-002 | SGS-004B | 4B-7A, 8F+,8F-    |
| PZA-106             | E-4113   | EM56/54    | 11 | 12  | SDE-002 | SGS-004B | 4B-7A, 9F+,9F-    |
| PZA-107             | E-4113   | EM56/54    | 13 | 14  | SDE-002 | SGS-004B | 4B-7A, 10F+,10F-  |
| PZA-122             | E-4113   | EM56/54    | 15 | 16  | SDE-002 | SGS-004B | 4B-7A, 11F+,11F-  |
| PZA-123             | E-4113   | EM56/54    | 17 | 18  | SDE-002 | SGS-004B | 4B-1B, 19F+,19F-  |
| P-4830/31           | E-4113   | EM56/54    | 19 | 20  | SDE-002 | SGS-004B | 4B-1B, 18F+,18F-  |
| PZA-072             | E-4113   | EM56/54    | 21 | 22  | SDE-002 | SGS-004B | E-4191-03,04      |
| PZA-084             | E-4113   | EM56/54    | 23 | 24  | SDE-002 | SGS-004B | E-4191-05,06      |
| PZA-086             | E-4113   | EM56/54    | 25 | 26  | SDE-002 | SGS-004B | E-4191-07,08      |
| GBS-101 C           | E-4113   | EM56/54    | 27 | 28  | SDE-002 | SGS-004B | 4B-1A, 7F+,7F-    |
| PDZA-212            | E-4113   | EM56/54    | 29 | 30  | SDE-002 | SGS-004B | 4B-7A, 3F+,3F-    |
| HBS-129             | E-4113   | EM56/54    | 31 | 32  | SDE-002 | SGS-004B | 4B-1B, 4F+4F-     |
| US-2021 (0)         | E-4113   | EM56/54    | 33 | 34  | SDE-002 | SGS-004B | 4B-2B, 1F+,1F-    |
| US-2021 (C)         | E-4113   | EM56/54    | 35 | 36  | SDE-002 | SGS-004B | 4B-10B, 10F+,10F- |
| SPARE               |          |            | 37 | 38  |         |          | 200000000         |
| PDIZA-1523          | E-4113   | EM56/54    | 39 | 40  | SDE-002 | SGS-004B | NOTE-1            |
| HS-2230             | E-4113   | EM56/54    | 41 | 42  | SDE-002 | SGS-004B | NOTE-1            |
| SPARE               |          |            | 43 | 44  |         |          |                   |
| SPARE               |          |            | 45 | 46  |         |          |                   |
| SPARE               |          |            | 47 | 48  |         |          |                   |
| SPARE               |          |            | 49 | 50  |         |          |                   |
| SPARE               |          |            | 51 | 52  |         |          |                   |
| SPARE               |          |            | 53 | 54  |         |          |                   |

# NOTE-1 SYSTEM DETAILS AWAITED.

| AREA        | :NIMR              |        | SCALI<br>0               | E :<br>1     | 2           | 3 4              | CAD<br>5 | DR           | AWI<br>6    | NG<br>7 |
|-------------|--------------------|--------|--------------------------|--------------|-------------|------------------|----------|--------------|-------------|---------|
| SUB AREA    | PRODUCTION STATION | но. 05 | 850-4                    |              | تَمَان      | فنطغ             | ميةز     | نتظ          | 5           | E to    |
|             |                    |        | Petroleum Development Om |              |             |                  |          | 0m           | an          |         |
| DRWG.TYPE   | :ICTD              |        | DRWG                     | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER | SHEET    | PROJ<br>CODE | DWG<br>SIZE | REV.    |
| DESCRIPTION | :E-4113            |        | NO                       | NIM          | 5           | 5591             | 128      | DQ           | 4           | Α       |
|             |                    |        |                          | 1            |             |                  |          |              |             |         |

| SYSTEM C            |        |          |    |     |         |          |                  |
|---------------------|--------|----------|----|-----|---------|----------|------------------|
| TAG<br>NUMBER<br>48 | NUMBER | SIZE TMI |    | L'S | FROM    | ТО       | CONNECTED TO     |
| UZ-791              | E-4122 | EM30/28  | 01 | 02  | SDE-002 | SGS-001B | 1B-3B, 8L+,8L-   |
| UZ-792              | E-4122 | EM30/28  | 03 | 04  | SDE-002 | SGS-001B | 1B-3B, 9L+,9L-   |
| UZ793               | E-4122 | EM30/28  | 05 | 06  | SDE-002 | SGS-001B | 1B-3B, 10L+,10L- |
| UZ794               | E-4122 | EM30/28  | 07 | 08  | SDE-002 | SGS-001B | 1B-3B, 11L+,11L- |
| UZ-797              | E-4122 | EM30/28  | 09 | 10  | SDE-002 | SGS-001B | 1B-3B, 13L+,13L- |
| PICA-083            | E-4122 | EM30/28  | 11 | 12  | SDE-002 | SGS-001B | 1B-2B, 1L+,1L-   |
| UZ-413              | E-4122 | EM30/28  | 13 | 14  | SDE-002 | SGS-001B | 2B-8B, 3L+,3L-   |
| UZ-412              | E-4122 | EM30/28  | 15 | 16  | SDE-002 | SGS-001B | 2B-8B, 2L+,2L-   |
| UZ751               | E-4122 | EM30/28  | 17 | 18  | SDE-002 | SGS-001B | 2B-8B, 10L+,10L- |
| UZ-433              | E-4122 | EM30/28  | 19 | 20  | SDE-002 | SGS-001B | 2B-12B, 6L+,6L-  |
| UZ-432              | E-4122 | EM30/28  | 21 | 22  | SDE-002 | SGS-001B | 2B-9B, 5L+,5L-   |
| UZ-761              | E-4122 | EM30/28  | 23 | 24  | SDE-002 | SGS-001B | 2B-12B, 7L+,7L-  |
| UŽV-2660            | E-4122 | EM30/28  | 25 | 26  | SDE-002 | SGS-001B | NOTE-1           |
| SPARE               |        |          | 27 | 28  |         |          |                  |

# NOTE-1 SYSTEM DETAILS AWAITED.

|             |                    |        |                       |              |             |                  |          | МЗ           | ואזוס       | -20     |
|-------------|--------------------|--------|-----------------------|--------------|-------------|------------------|----------|--------------|-------------|---------|
| AREA        | ,NIMR              |        | SCALI<br>0            | E :          | 2           | 3 4              | CAD<br>5 | DR           | AWI         | NG<br>7 |
| SUB AREA    | PRODUCTION STATION | но. 05 |                       |              | مَان        | فنطغ             | ميةز     | نتظ          | 5           | â       |
|             |                    |        | Petroleum Development |              |             |                  |          | 0m           | an          |         |
| DRWG.TYPE   | :ICTD              |        | DRWG                  | AREA<br>CODE | ENG<br>SECT | SERIAL<br>NUMBER | SHEET    | PROJ<br>CODE | DWG<br>SIZE | REV.    |
| DESCRIPTION | :E-4122            |        | NO                    | NIM          | 5           | 5591             | 137      | DQ           | 4           | Α       |

# SGS INSTRUMENT LOOP DIAGRAMS PART-II

Vendor details to be provided

REFERENCE DRAWINGS:

1. DCS INST. LOOP DIAGRAMS

: NIM-5-5594-001-3 & NIM-5-5907-001-3

2. SGS INST. LOOP DIAGRAMS PART I: NIM-5-5595-001-3

(ALL TAGS EXCEPT 'X' & 'U').

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

|       |          |       | <u>,                                    </u> | $\sqrt{}$ |                          |           |                |           |
|-------|----------|-------|----------------------------------------------|-----------|--------------------------|-----------|----------------|-----------|
| A     | MAR. 11  | KK    | THE                                          | 7         | APPOVED FOR CONSTRUCTION | IN.09.011 | OSE/23N        |           |
| 0     | DEC.'10  | Мгр   | PT                                           | KØA       | ISSUED FOR COMMENTS      | IN.09.011 | OSE/23N        | IH        |
|       |          | DRAWN | TEAML.                                       | TENC      |                          |           | PROJ. ENG.     | SIGNATURE |
| NGE V | REV DATE | BY    | CHECKED                                      |           | - DESCRIPTION            | B.L. NO   | P D O APPROVAL |           |
|       |          |       |                                              |           |                          |           |                |           |

PROJECT DRAWING REVISION

IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT

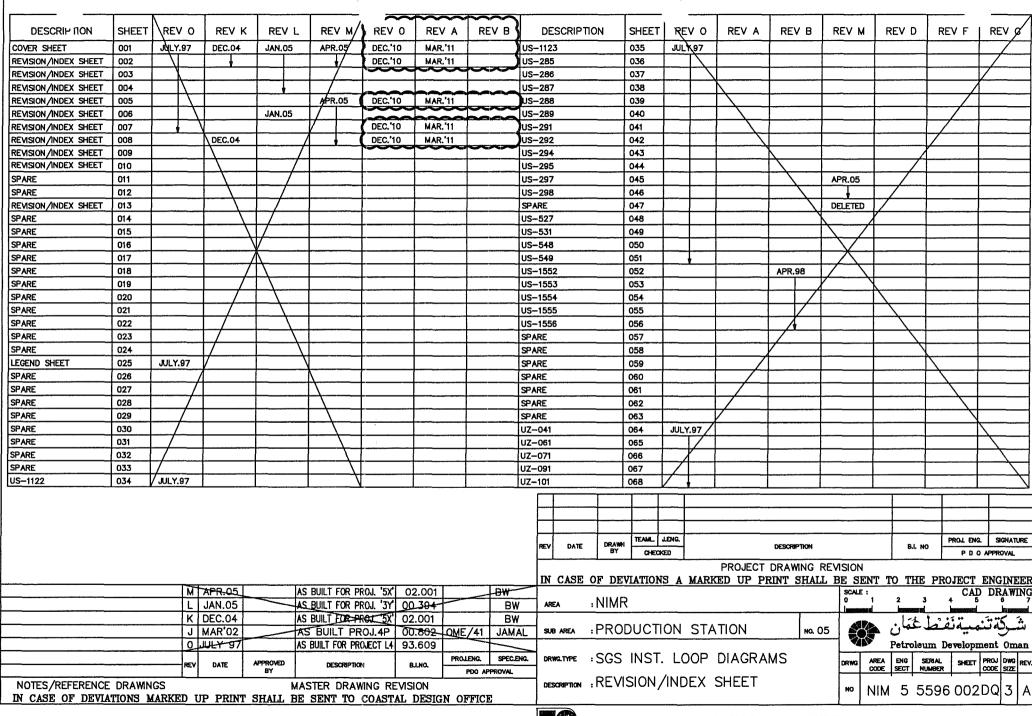
| AREA     | :NIMR                      |        | l |
|----------|----------------------------|--------|---|
| SUÐ AREA | :PRODUCTION STATION        | NO. 05 |   |
|          | 000 11107 1 000 01400 4110 |        | l |

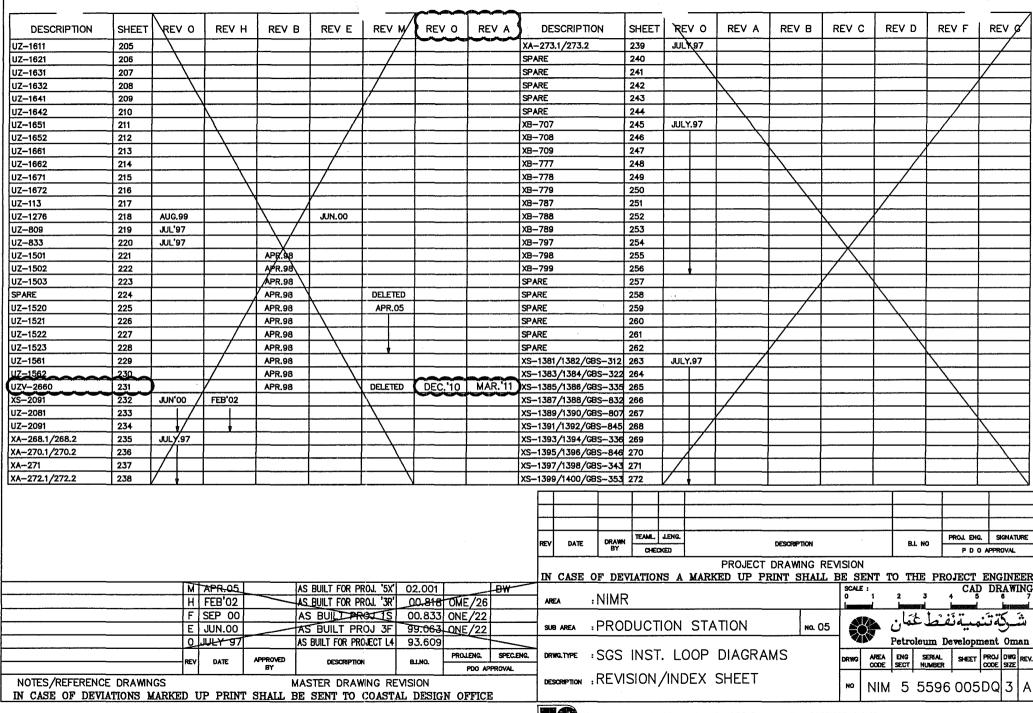
DRWG\_TYPE : SGS INST. LOOP DIAGRAMS

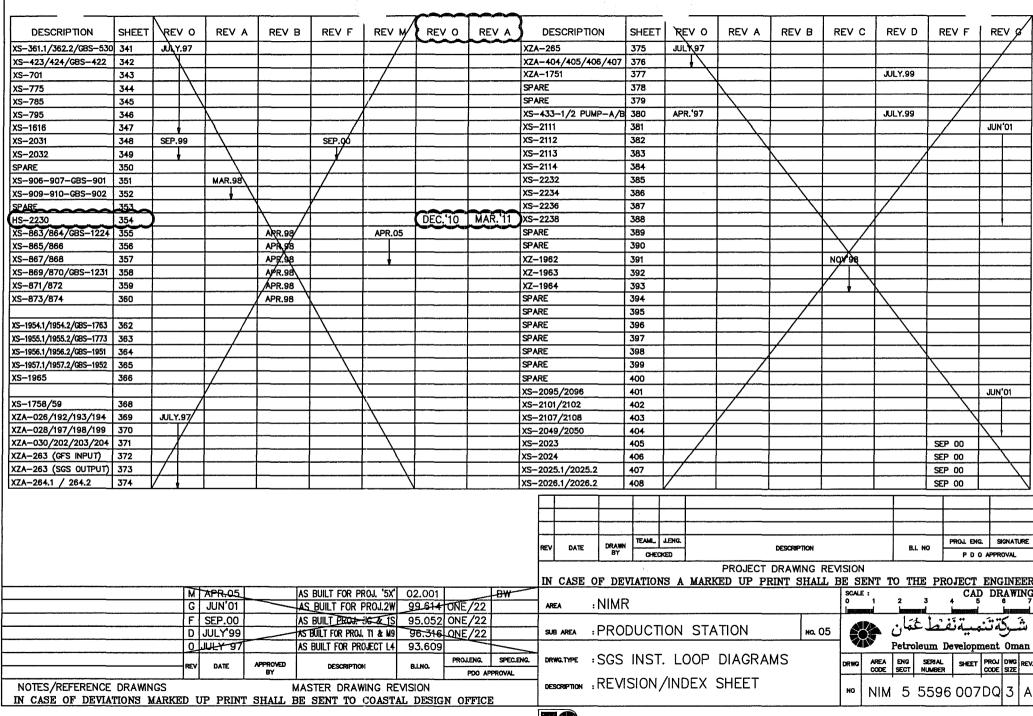
DESCRIPTION : COVER SHEET

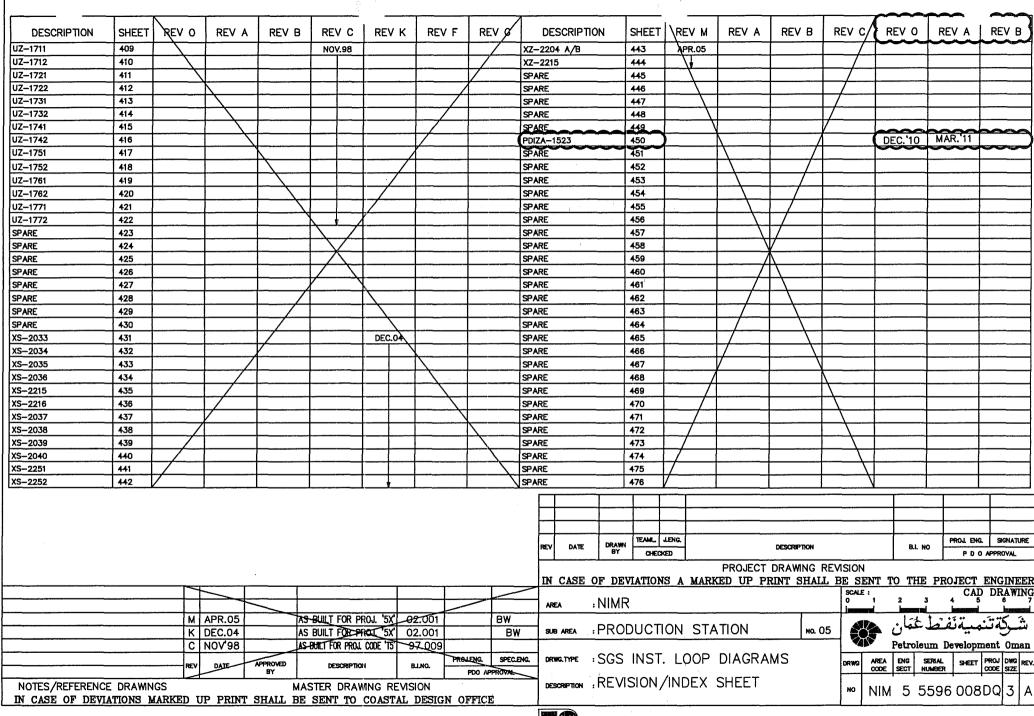
Petroleum Development Oman NIM 5 5596 001DQl3

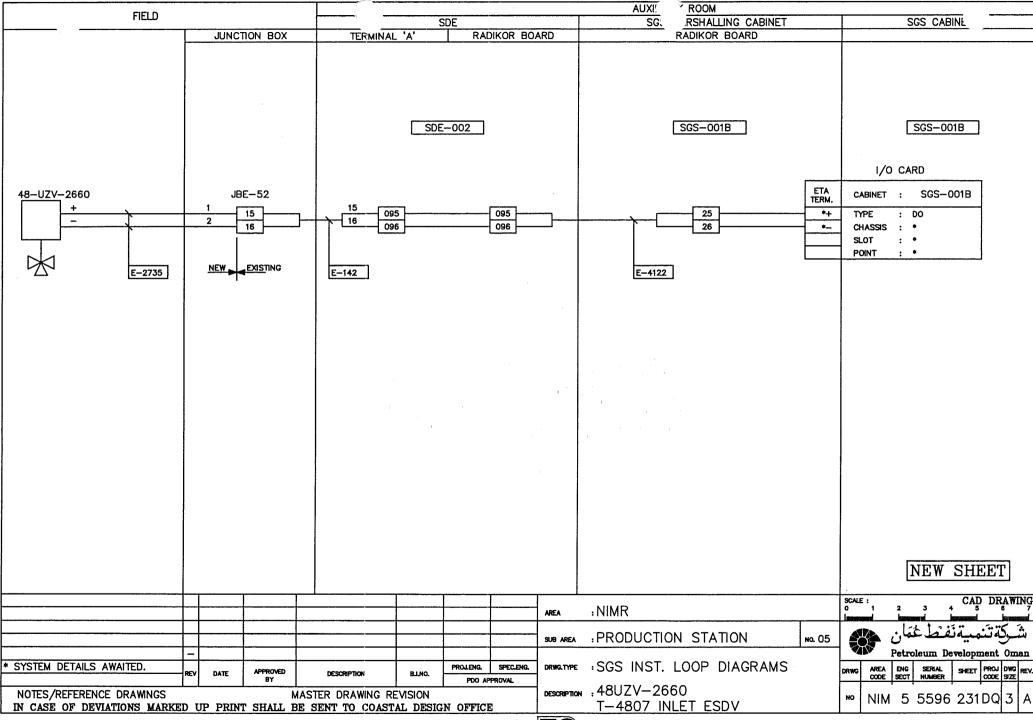
M APR.05 AS BUILT FOR PROJ. '5X' 02.001 AS BUILT FOR PROJ. '3Y' 00.394 L JAN.05 BW K DEC.04 AS BUILT FOR PROJ 5X 02.001 BW J MAR'02 AS BUILT PROJ.4P 00:802 QME/41 **JAMAL** 0 JULY 97 AS BUILT FOR PROJECT L4 93,609 PROJENG. SPEC.ENG. APPROVED NOTES/REFERENCE DRAWINGS MASTER DRAWING REVISION IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

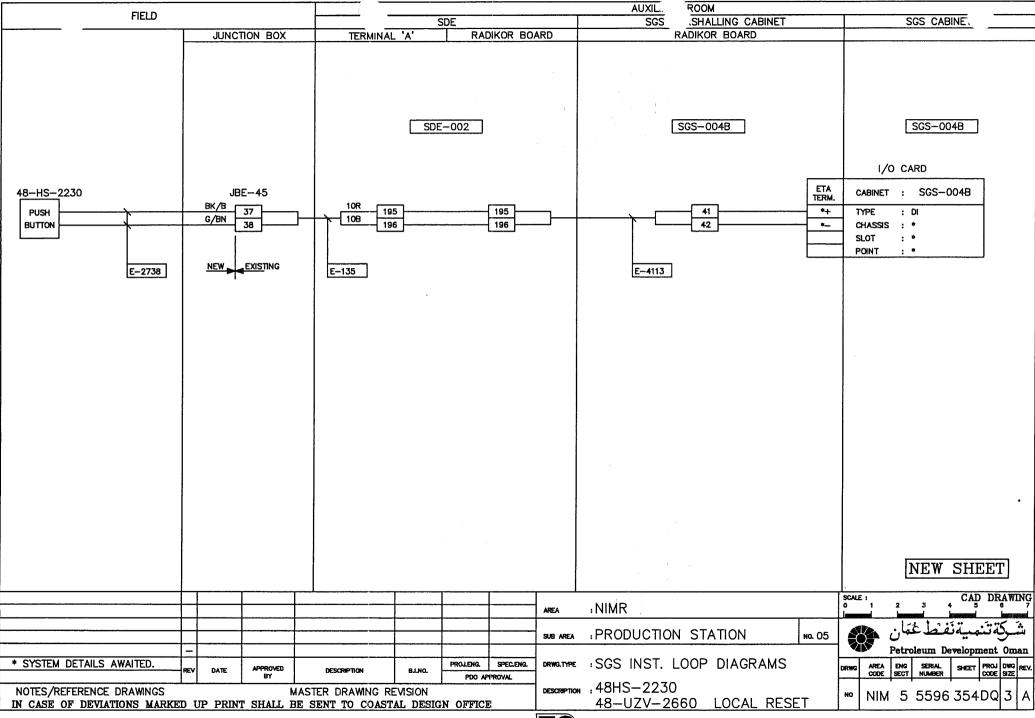


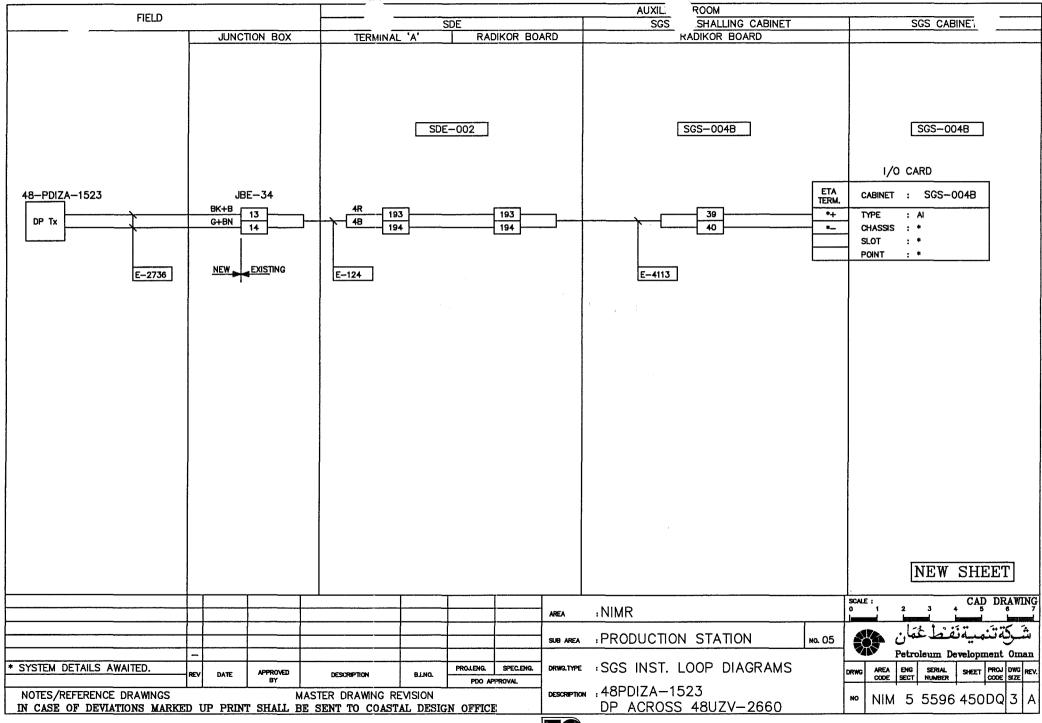












# SUMMARY OF INSTRUMENTATION CABLES

FOR MULTICORE CABLES REF. DRG.: NIM-5-5044

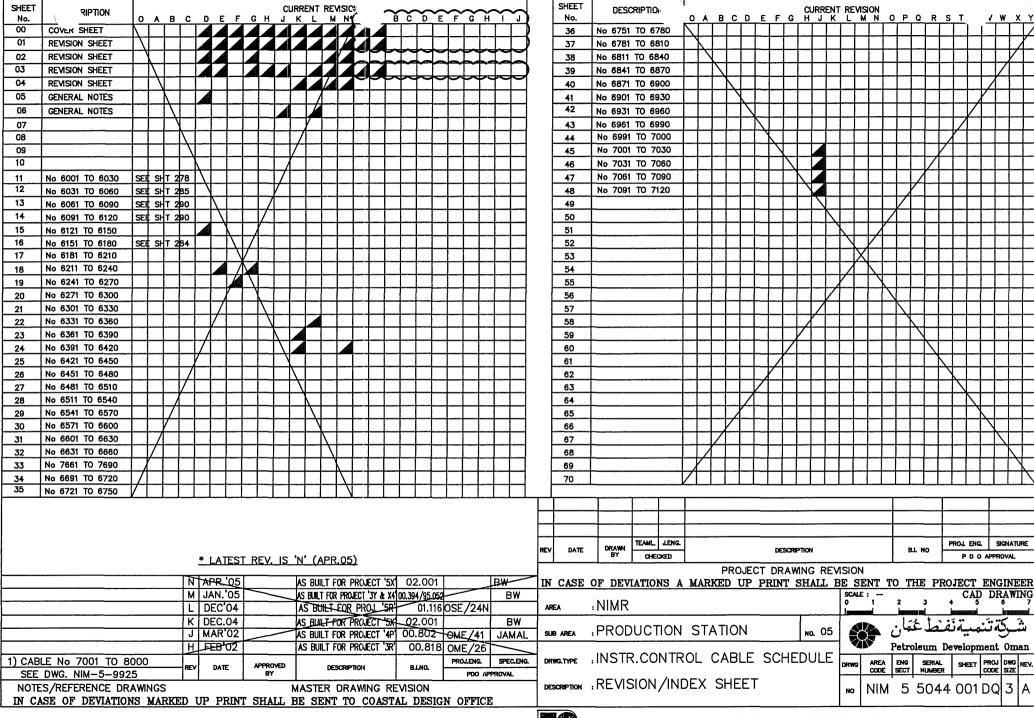
FOR SIGNAL CABLES REF. DRG. : NIM-5-9925

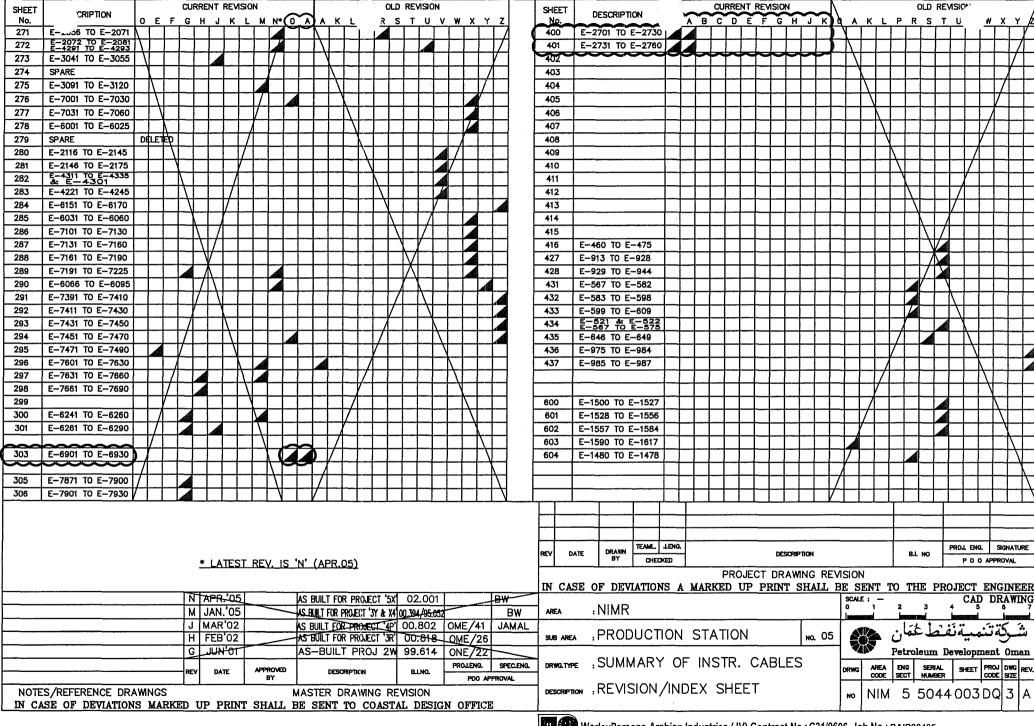
FOR SYSTEM CABLES REF. DRG. : NIM-5-5591 & NIM-5-5906

PLC shall be replaced with RTY

SCOPE OF 'DQ' PROJECT WBS.NO: NIM.IN.09.011

|                               |    |         |          |                                |               |          |           | A    | MAR.'11       | KK     | NW     | 4     | APPROVED FOR CONSTRUCT | TION   |        |       | IN.09.011   | OSE/23N                                 |           |
|-------------------------------|----|---------|----------|--------------------------------|---------------|----------|-----------|------|---------------|--------|--------|-------|------------------------|--------|--------|-------|-------------|-----------------------------------------|-----------|
|                               |    |         |          |                                |               |          |           | 0    | DEC. 10       | NS     | PΤ     | KŚD   | ISSUED FOR COMMENTS    |        |        |       | IN.09.011   | OSE/23N                                 | IH        |
| * LATEST REV. IS 'N' (APR.05) |    |         |          |                                |               |          |           | DEV. | DATE          | DRAWN  | TEAML. | JENG. | DESCRIP                | OTTON! |        |       | B.I. NO     | PROJ. ENG.                              | SIGNATURE |
| - LATEST REV. IS N (APR.US)   |    |         |          |                                |               |          |           | REV  | DAIL          | BY     | CHEC   | KED   | DESCRIP                | TION   |        |       | B.I. NO     | P D O AF                                | PROVAL    |
|                               |    |         |          |                                |               |          |           |      |               |        |        |       | PROJECT DRAW           | ING RE | VISION | 7     |             |                                         |           |
|                               | N  | APR. 05 |          | as built for project '5x'      | 02.001        |          | BW        | IN   | CASE O        | F DEVI | ATION  | NS A  | MARKED UP PRINT S      | SHALL  | BE S   | ENT 1 | O THE PR    | OJECT E                                 | NGINEER   |
|                               | М  | JAN.'05 |          | as built for project '3y & X4' | 00.394/95.052 |          | BW        |      |               |        |        |       |                        |        | SCAL   | E: _— |             | CAD !                                   | DRAWING   |
|                               | L  | DEC'04  |          | AS BUILT FOR PROJ '5R'         | 01.116        | OSE/24N  |           | ARE  | EA : [        | NIMR   |        |       |                        |        |        | 1     | 2 3         | herman                                  |           |
|                               | K  | DEC.04  |          | AS BUILT FOR PROJECT '5X'      | 02.001        |          | BW        |      |               | 7000   | LIOT   | 1011  | CTATION                |        | 4      | 1Pa   | .134 10     | تنميةنف                                 | : 75 %    |
|                               |    | MAR'02  |          | AS BUILT FOR PROJECT '4P'      | 00.802        | OME/41   | JAMAL     | SUE  | BAREA :       | ROD    | UCT    | ION   | STATION                | NO. 05 |        |       | سعد عدان    | *************************************** |           |
| _                             | 町  | FEB 02  |          | AS BUILT FOR PROJECT '3R'      | 00818         | OME/26   |           |      |               | ~      |        |       |                        |        | 74     | P.    | Petroleum 1 | )evelopme                               | nt Oman   |
| _                             | ×- | DATE    | APPROVED | DESCRIPTION                    | B.I.NO.       | PROJENG. | SPEC.ENG. | DRV  | MG.TYPE :     | SUMM   | IARY   | ' OF  | INST. CABLES           |        | DRWG   | AREA  | ENG SERIAL  | SHEET PR                                | DWG REV.  |
|                               |    | DATE    | BY       | DESCRIPTION                    | B.I.NO.       | PDO AF   | PROVAL    |      |               |        | _ ~    |       |                        |        | -      | CODE  | SECT NUMBER | 1 100                                   | DE SIZE   |
| NOTES/REFERENCE DRAWINGS      |    |         | 1        | MASTER DRAWING RE              | VISION        |          |           | DES  | SCRIPTION ; ( | COAF   | R SI   | HEE   |                        |        | NO     | NIM   | 5 504       | 4000 D                                  | Q[3 A     |
| IN CASE OF DEVIATIONS MARKED  | U. | P PRINT | 'SHALL I | BE SENT TO COASTA              | AL DESIG      | n offici | g         |      |               |        |        |       |                        |        |        |       |             |                                         |           |





|         |                  |                          | DESC                                             | RIPTION      | OF CABLE                  |                                         |             | DESC             | RIPTION     | OF RUN                     | ]                                                |                                              | GLAN                                              | D          |              |                                              |
|---------|------------------|--------------------------|--------------------------------------------------|--------------|---------------------------|-----------------------------------------|-------------|------------------|-------------|----------------------------|--------------------------------------------------|----------------------------------------------|---------------------------------------------------|------------|--------------|----------------------------------------------|
| REV     | NUMBER<br>48-    | SIZE mm                  | LEN                                              | GTH M        | OUTER<br>SHEATH<br>COLOUR | TYPE                                    | VOLT        | FF               | ROM         | то                         | CABLE REF                                        | TYPE                                         | SIZE                                              | RE         | F            | REMARKS                                      |
|         | -6901            |                          |                                                  | ····         |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | -6902            |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | -6903            |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | -6904            |                          |                                                  |              |                           |                                         |             |                  |             | -                          |                                                  |                                              |                                                   | _          |              |                                              |
|         | -6905            |                          |                                                  |              |                           |                                         |             |                  |             | ļ                          |                                                  |                                              | ļ                                                 |            |              |                                              |
| 94 - 54 |                  |                          | 1                                                |              |                           |                                         |             | <u> </u>         |             |                            |                                                  | ļ                                            | <del>                                     </del>  |            |              |                                              |
|         | -6906            | 10.0.00                  | <u> </u>                                         | F0           | DI AOK                    | VIDEL NO CHA DV                         | 20 04       | 49 100           | 6007        | 48 DLO 0001                |                                                  | <u> </u>                                     | <b> </b>                                          |            |              |                                              |
| 0       | E-6907           | 10x2x0.8mm               |                                                  | 50<br>50     | BLACK<br>BLACK            | XLPEI-MS-SWA-PV                         |             | 48-JBE<br>48-JBE |             | 48-PLC-0001<br>48-PLC-0001 |                                                  | <del> </del>                                 | <b> </b>                                          |            |              |                                              |
| 0       | E-6908<br>E-6909 | 10x2x0.8mm<br>10x2x0.8mm |                                                  | 50<br>50     |                           | XLPEI-MS-SWA-PV                         |             | 48-JBE           |             | 48-PLC-0001                |                                                  |                                              | -                                                 |            |              |                                              |
| 0       | E-6910           | 10x2x0.8mm               |                                                  | 30           | BLACK                     | XLPEI-MS-SWA-PV                         |             | 48-JBE           |             | 48-PLC-0001                | <del>                                     </del> | <del> </del>                                 | <del>                                     </del>  | _          |              | (VENDOR JB)                                  |
|         | 2 0310           | TOXEXOLUTION             | <del>                                     </del> |              | BBAOK                     | XL 13 180 011/1 1 1                     | 75 27       | 10 002           |             | 10 120 0001                |                                                  |                                              |                                                   |            |              | (VENDOR OD)                                  |
| 0       | E-6911           | 10x2x0.8mm               | 1                                                | 30           | BLACK                     | XLPEI-MS-SWA-PV                         | S 24        | 48-JBE           | -6911       | 48-PLC-0001                |                                                  |                                              | 1                                                 | $\neg$     |              | (VENDOR JB)                                  |
|         | E-6912           | 10x2x0.8mm               |                                                  | 30           | BLACK                     | XLPEI-MS-SWA-PV                         |             |                  |             | 48-PLC-0001                |                                                  |                                              |                                                   |            |              | (VENDOR PNL)                                 |
|         | E-6913           | 10x2x0.8mm               |                                                  | 30           |                           | XLPEI-MS-SWA-PV                         |             |                  |             | 48-PLC-0001                |                                                  |                                              |                                                   |            |              | (VENDOR PNL)                                 |
|         | E-6914           |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              | (SPARE)                                      |
|         | E-6915           |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              | (SPARE)                                      |
|         |                  |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | E-6916           |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              | (SPARE)                                      |
|         | -6917<br>COAR    |                          |                                                  |              |                           |                                         |             | <b>_</b>         |             |                            |                                                  | <u> </u>                                     | <del> </del>                                      |            |              |                                              |
|         | -6918<br>-6919   |                          | <u> </u>                                         |              |                           |                                         |             |                  |             | <del> </del>               |                                                  |                                              |                                                   |            |              |                                              |
|         | -6920            |                          | -                                                |              |                           |                                         |             |                  |             | <u> </u>                   |                                                  | <u> </u>                                     | <del>                                      </del> |            |              |                                              |
| 11 194  | -0320            |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              | -                                                 |            |              |                                              |
|         | -6921            |                          | <del> </del>                                     |              |                           |                                         |             |                  |             |                            |                                                  |                                              | 1                                                 |            | <u> </u>     |                                              |
|         | -6922            |                          |                                                  |              |                           | *************************************** |             |                  |             |                            |                                                  |                                              |                                                   | Ti Ti      |              |                                              |
|         | -6923            |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | -6924            |                          |                                                  |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | -6925            |                          | <u> </u>                                         |              |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         |                  |                          |                                                  |              |                           |                                         |             | <u> </u>         |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         | -6926            |                          |                                                  |              |                           |                                         |             | <u> </u>         |             |                            |                                                  | <u> </u>                                     | ļ                                                 |            |              |                                              |
|         | -6927<br>-6928   |                          |                                                  |              |                           |                                         |             |                  | ·           |                            |                                                  | <b> </b>                                     | ļ                                                 |            |              |                                              |
|         | -6928<br>-6929   | <del></del>              | <u> </u>                                         |              |                           |                                         |             | <del> </del>     |             | <del> </del>               |                                                  |                                              |                                                   |            |              |                                              |
|         | -6930            |                          |                                                  |              |                           |                                         |             | <u> </u>         |             |                            |                                                  |                                              | ļ                                                 |            |              |                                              |
| N (1)   | 0000             |                          |                                                  |              |                           |                                         | <del></del> |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         |                  |                          | <u> </u>                                         |              |                           |                                         |             | <u> </u>         |             | <u> </u>                   | I                                                | <u>.                                    </u> | 1                                                 |            | <del>_</del> | NEW SHEET                                    |
|         |                  |                          |                                                  | <del></del>  |                           |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |
|         |                  |                          |                                                  |              |                           |                                         | <u> </u>    |                  |             | NIMD                       |                                                  |                                              |                                                   | SCALE:     | 2 3          | CAD DRAWI                                    |
|         |                  |                          |                                                  |              |                           |                                         |             | <u> </u>         | AREA        | :NIMR                      |                                                  |                                              | T                                                 | _lessessed |              |                                              |
|         |                  |                          | -                                                |              |                           |                                         | <u> </u>    |                  | SUB AREA    | .PRODUCTIO                 | N STATION                                        |                                              | NO. 05                                            |            | غَمَانِ.     | <u>َــــــــــــــــــــــــــــــــــــ</u> |
|         |                  | <del> </del>             |                                                  |              |                           |                                         | <b>-</b>    | <del>  -</del>   | SAD AREA    |                            | 01/(1101)                                        |                                              | J 00                                              | <b>777</b> |              | ım Development Om                            |
|         | <del></del>      |                          | -                                                | <del> </del> |                           |                                         | PROJENG.    | SPEC.ENG.        | DRWG TYPE   | .INSTRUMEN                 | IT CABLE S                                       | CHEDU                                        | LE I                                              |            |              |                                              |
|         |                  | r                        | REV DATE                                         | APPRO1       |                           | жетком вл.но.                           |             | PPROVAL.         |             |                            |                                                  |                                              |                                                   | DRWG AREA  | ENG S        | ERIAL SHEET PROJ DWG<br>AMBER CODE SIZE      |
| NOTES / | REFERENCE        | DRAWINGS                 |                                                  |              |                           | RAWING REVISION                         | 1           |                  | DESCRIPTION | .CABLE No.                 | E-6901 T                                         | O E-69                                       | 930                                               | NO NIN     | , E E        | 044 303 DQ 3                                 |
|         | OF DEVIAT        |                          |                                                  |              | 1717 Tar   1 (m) \ L      |                                         |             |                  |             |                            |                                                  |                                              |                                                   |            |              |                                              |

|                |               |               | DESCRIPTION                                      |                                       | Ē                  |                | DESCR    | IPTION C     | OF RUN      | ]         |                                         | GLAND                                 |              |                                              |
|----------------|---------------|---------------|--------------------------------------------------|---------------------------------------|--------------------|----------------|----------|--------------|-------------|-----------|-----------------------------------------|---------------------------------------|--------------|----------------------------------------------|
| EV             | NUMBER<br>48- | SIZE mm       | LENGTH M                                         | OUTER<br>SHEATH<br>COLOUR             | TYPE               | VOLT           | FR       | 1            | TO          | CABLE REF | TYPE                                    | SIZE                                  | REF          | REMARKS                                      |
|                | -2701         |               |                                                  |                                       |                    |                |          |              |             |           |                                         |                                       |              |                                              |
|                | -2702         |               |                                                  |                                       |                    |                |          |              | :           |           | *************************************** |                                       |              |                                              |
|                | -2703         |               |                                                  |                                       |                    |                |          |              |             |           |                                         |                                       |              |                                              |
|                | -2704         |               |                                                  |                                       |                    |                |          |              |             |           |                                         |                                       |              |                                              |
|                | -2705         |               |                                                  |                                       |                    |                |          |              |             |           |                                         |                                       |              |                                              |
|                |               |               |                                                  |                                       |                    |                | 45       |              |             |           | ·                                       |                                       |              | (                                            |
| 0              | E-2706        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-LIA-1 |              | 48-JBE-6907 |           |                                         |                                       |              | (NEW JB)                                     |
| 0              | E-2707        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-LIZA- |              | 48-JBE-6907 |           |                                         |                                       |              | (NEW JB)                                     |
| 0              | E-2708        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-TIA-1 |              | 48-JBE-6907 |           | ·                                       |                                       |              | (NEW JB)                                     |
| <u> </u>       | E-2709        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-FI-14 |              | 48-JBE-6907 |           |                                         |                                       | <u> </u>     | (NEW JB)                                     |
| 0              | E-2710        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   | S 24           | 48-LIZA- | 1451 2       | 18-JBE-6908 |           | <del></del>                             |                                       | 1            | (NEW JB)                                     |
| 0              | E-2711        | 2x2x1.13mm    | . 40                                             | BLACK                                 | XLPEI-MS-SWA-PVC   | S 24           | 48-LIA-1 | 1452 4       | 18-JBE-6908 |           |                                         |                                       |              | (NEW JB)                                     |
| 0              | E-2712        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-PIZA- |              | 48-JBE-6908 |           |                                         |                                       | <del> </del> | (NEW JB)                                     |
| 0              | E-2713        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-PDIA- |              | 48-JBE-6908 |           |                                         |                                       | -            | (NEW JB)                                     |
| <del>0</del>   | E-2714        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-PDIA- |              | 18-JBE-6908 |           |                                         |                                       |              | (NEW JB)                                     |
| ŏ              | E-2715        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   |                | 48-XZA-  |              | 18-JBE-6909 |           |                                         |                                       |              | (NEW JB)                                     |
|                |               |               |                                                  | +==                                   |                    | <del>-  </del> | 7= 7     |              |             |           | ·                                       |                                       |              | (11211 02)                                   |
| 0              | E-2716        | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   | S 24           | 48-XZA-  | -2343 4      | 18-JBE-6909 |           |                                         |                                       |              | (NEW JB)                                     |
|                | E-2717A       | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  |              | 8-JBE-6909  |           |                                         |                                       |              | (NEW JB)                                     |
|                | E-2717B       | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  | 2219B 4      | 8-JBE-6909  |           |                                         |                                       |              | (NEW JB)                                     |
|                | E-2718        | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  | 2658 4       | 8-JBE-6909  |           |                                         |                                       |              | (NEW JB)                                     |
| 0              | E-2719A       | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   | S 24           | 48-HS-2  |              | 8-JBE-6909  |           |                                         |                                       |              | (NEW JB)                                     |
|                |               |               |                                                  |                                       |                    |                |          |              |             |           |                                         |                                       |              |                                              |
|                | E-2719B       | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  |              | 8-JBE-6909  |           |                                         |                                       |              | (NEW JB)                                     |
| <u> </u>       | E-2720        | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  |              | 8-JBE-6909  |           |                                         |                                       |              | (NEW JB)                                     |
| 0              | E-2721        | 2x2.5 Sq.mm   | 30                                               |                                       | XLPEI-SWA-PVCS     | 24             | 48-XA-4  |              | 18-PLC-0001 |           |                                         |                                       |              | (STRIGHT RUN)                                |
| 0              | E-2722        | 2x2.5 Sq.mm   | 50                                               | BLACK                                 | XLPEI-SWA-PVCS     | 24             | ELECTRIC |              | 8-FI-1414   |           |                                         |                                       |              | (POWER SUPPL                                 |
| 0              | E-2723A       | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   | S 24           | 48-HS-2  | 2661A 4      | 8-JBE-6910  |           |                                         |                                       |              | (VENDOR JB)                                  |
| 0              | E-2723B       | 2x2x1.13mm    | 40                                               | BLACK                                 | XLPEI-MS-SWA-PVC   | 5 24           | 48~HS-2  | 06610 4      | 8-JBE-6910  |           |                                         |                                       |              | (ALENDOD ID)                                 |
|                | E-2724A       | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  | 26624        | 8-JBE-6910  |           |                                         |                                       |              | (VENDOR JB)                                  |
| <del>5  </del> |               | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  |              | 8-JBE-6910  | -         |                                         |                                       | <u> </u>     | (VENDOR JB)<br>(VENDOR JB)                   |
|                | E-2725        | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  |              | 8-JBE-6910  |           |                                         | · · · · · · · · · · · · · · · · · · · | <del> </del> | (VENDOR JB)                                  |
|                | E-2726        | 2x2x1.13mm    | 40                                               |                                       | XLPEI-MS-SWA-PVC   |                | 48-HS-2  |              | 8-JBE-6910  |           |                                         |                                       |              | (VENDOR JB)                                  |
| Ŭ              | L-2/20        | 20201.1311111 | 70                                               | BLACK                                 | ALI LI-WS-SWA-I VC | 3 24           | 70-113-2 | .00+ +       | 0-0DC-0910  |           |                                         |                                       |              | (VENDOR OB)                                  |
|                |               |               |                                                  | · · · · · · · · · · · · · · · · · · · |                    |                |          |              | 1           |           |                                         |                                       | 1            | NEW SHE                                      |
|                |               |               | 1                                                |                                       |                    | T              | <u> </u> |              |             | •         |                                         |                                       | TALE .       |                                              |
|                |               |               | <del>                                     </del> |                                       |                    |                |          | REA :        | NIMR        |           |                                         | 0                                     | CALE:<br>1 2 | CAD DR                                       |
|                |               |               |                                                  | -                                     |                    |                | s        | SUB AREA :   | PRODUCTIO   | N STATION |                                         | NO. 05                                | ن کیک        | فة تنمية نَفْ طُ عُمَا                       |
|                |               |               | 1                                                |                                       |                    | <b> </b>       |          |              |             |           |                                         |                                       | Pe           | troleum Development                          |
|                |               | RE            | V DATE APPRO                                     |                                       | CRIPTION B.I.NO.   | PROJ.ENG.      | PPROVAL  |              |             | T CABLE S |                                         | DR                                    | WG AREA EN   | NG SERIAL SHEET PROJ<br>CT NUMBER SHEET CODE |
| TFS/I          | REFERENCE D   | DRAWINGS      | _1                                               | MASTER D                              | RAWING REVISION    |                | DI       | ESCRIPTION : | CABLE No.   | E-2701 TO | E - 27                                  | 26                                    |              | 5 5044 400 DQ                                |

|          |                 |               | DESC     | RIPTION      | OF CABLE                  |                      |           | DESCRIPTION  | N OF RUN           |              |        | GLAN                                             | ID               |                                               |
|----------|-----------------|---------------|----------|--------------|---------------------------|----------------------|-----------|--------------|--------------------|--------------|--------|--------------------------------------------------|------------------|-----------------------------------------------|
| REV      | NUMBER<br>48-   | SIZE mm       | LENG     | этн м        | OUTER<br>SHEATH<br>COLOUR | TYPE                 | VOLT      | FROM         | ТО                 | CABLE REF    | TYPE   | SIZE                                             | REF              | REMARKS                                       |
| 0        | E-2727          | 2x2x1.13mm    | 4        | 0            | BLACK                     | XLPEI-MS-SWA-PVCS    | 24        | 48-LIA-1449  | 48-JBE-6911        | <u> </u>     |        | <del>                                     </del> | _                | (VENDOR JB)                                   |
| 0        | E-2728          | 2x2x1.13mm    | 4        |              | BLACK                     | XLPEI-MS-SWA-PVCS    |           | 48-LIZA-1450 |                    |              |        |                                                  |                  | (VENDOR JB)                                   |
|          | E-2729          | 2x2x1.13mm    | 4        |              |                           | XLPEI-MS-SWA-PVCS    |           | 48-PIZA-151  |                    |              |        |                                                  |                  | (VENDOR JB)                                   |
|          | E-2730          | 2x2x1.13mm    | 4        |              | BLACK                     | XLPEI-MS-SWA-PVCS    |           | 48-PIZA-151  | 9 48-JBE-6911      |              |        |                                                  |                  | (VENDOR JB)                                   |
| 0        | E-2731          | 2x2x1.13mm    | 4        | 0            | BLACK                     | XLPEI-MS-SWA-PVCS    | 24        | 48-PI-1522   | 48-JBE-6911        |              |        |                                                  |                  | (VENDOR JB)                                   |
| 0        | E-2732          | 2x2x1.13mm    | 4        | <u> </u>     | BLACK                     | XLPEI-MS-SWA-PVCS    | 24        | 48-FI-1415   | 48-JBE-6911        | -            |        | <u> </u>                                         |                  | (VENDOR JB)                                   |
|          | E-2733          | 2x2x1.13mm    | 3        |              |                           | XLPEI-MS-SWA-PVCS    |           |              | OL LOCAL CONTL PNI |              |        | <del> </del>                                     |                  | (BY VENDOR)                                   |
| 0        | E-2734          | 2x2x1.13mm    | 3        |              |                           | XLPEI-MS-SWA-PVCS    |           |              | OL LOCAL CONTL PNI |              |        | <del> </del>                                     |                  | (BY VENDOR)                                   |
|          | E-2735          | 2x2.5 Sq.mm   | 4        |              |                           | XLPEI-SWA-PVCS       | 24        | 48-UZV-2660  |                    |              |        | <u> </u>                                         |                  | (EXISTING JB)                                 |
|          | E-2736          | 2x2x1.13mm    | 4        |              |                           | XLPEI-MS-SWA-PVCS    | 24        |              | 23 48-JBE-34       |              |        |                                                  |                  | (EXISTING JB)                                 |
|          |                 |               |          |              | Di toli                   | V. 551 110 5111 5111 |           | 10.000.000   |                    |              |        |                                                  |                  |                                               |
|          | E-2737          | 2x2x1.13mm    | 4        |              |                           | XLPEI-MS-SWA-PVCS    |           | 48-GBS-2660  |                    |              |        | <u> </u>                                         |                  | (EXISTING JB)                                 |
|          | E-2738          | 2x2x1.13mm    | 4        | )            | BLACK                     | XLPEI-MS-SWA-PVCS    | 24        | 48-HS-2230   | 48-JBE-45          |              |        | <u> </u>                                         |                  | (EXISTING JB)                                 |
|          | E-2739          |               |          |              |                           | <u> </u>             |           |              |                    | <b> </b>     |        | <del> </del>                                     |                  | (SPARE)                                       |
|          | E-2740<br>-2741 |               | <u> </u> |              |                           |                      |           |              |                    |              |        |                                                  |                  | (SPARE)                                       |
|          | -2/41           |               |          |              |                           |                      |           |              |                    |              |        | <del> </del>                                     |                  |                                               |
|          | -2742           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          | -2743           |               |          |              |                           |                      |           |              |                    |              |        |                                                  | 1                |                                               |
|          | -2744           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          | -2745           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          | -2746           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
| W(500)   | -2747           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          | -2748           |               |          |              |                           |                      |           |              |                    | -            |        |                                                  |                  |                                               |
| $\dashv$ | -2749           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          | -2750           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          | -2751           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          |                 |               |          |              |                           |                      |           |              |                    |              |        | ļ                                                |                  |                                               |
| $\dashv$ | -2752<br>-2753  |               |          |              |                           | 1 1 .                |           |              | 1                  |              |        |                                                  |                  |                                               |
| $\dashv$ | -2754           |               |          |              |                           | 1                    |           |              | _                  | <del> </del> |        |                                                  | _                |                                               |
|          | -2755           |               | L        |              |                           |                      |           |              |                    |              |        |                                                  | -                |                                               |
|          | -2756           |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          |                 |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  |                                               |
|          |                 |               |          |              |                           |                      |           |              |                    |              |        |                                                  |                  | NEW SHEE                                      |
|          |                 |               |          |              |                           |                      |           |              |                    |              |        |                                                  | SCALE : -        | CAD DRA                                       |
|          |                 |               |          |              |                           |                      |           | AREA         | : NIMR             |              |        |                                                  | 0 1              | z 3 4 5 6                                     |
|          |                 |               |          | -            |                           |                      |           | SUB AREA     | .PRODUCTIO         | N STATION    |        | NO. 05                                           |                  | كة تنمية نَفْط عُمَار                         |
|          |                 |               |          |              |                           |                      |           |              | NIOTOLINIE         | T 0.15: 5    | OUED!! |                                                  | P                | etroleum Development (                        |
|          |                 | RI            | V DATE   | APPROV<br>BY | ED DESC                   | RIPTION B.I.NO.      | PROJ.ENG. |              | : INSTRUMEN        | I CABLE S    | CHEDUL | - <u>L</u>                                       | DRWG AREA CODE S | ENG SERIAL SHEET PROJ C<br>SECT NUMBER CODE S |
|          |                 | L<br>DRAWINGS |          |              |                           |                      | FUU API   | NOTAL        | ж : CABLE No.      | - 0707 T     | ~ - ~- | h                                                |                  | <del></del>                                   |

# DCS INSTRUMENT LOOP DIAGRAMS

System defails to be provided

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

15/4/2011

### REFERENCE DRAWINGS:

SGS INST. LOOP DIAGRAMS PART-I : NIM-5-5595-A3 SGS INST. LOOP DIAGRAMS PART-II : NIM-5-5596-A3 INST. SIGNAL DIAGRAMS GFS : NIM-5-5067-A3 DCS INST. LOOP DIAGRAMS : NIM-5-5907

APPROVED FOR CONSTRUCTION

NIM 5 5594 001DQ3 A

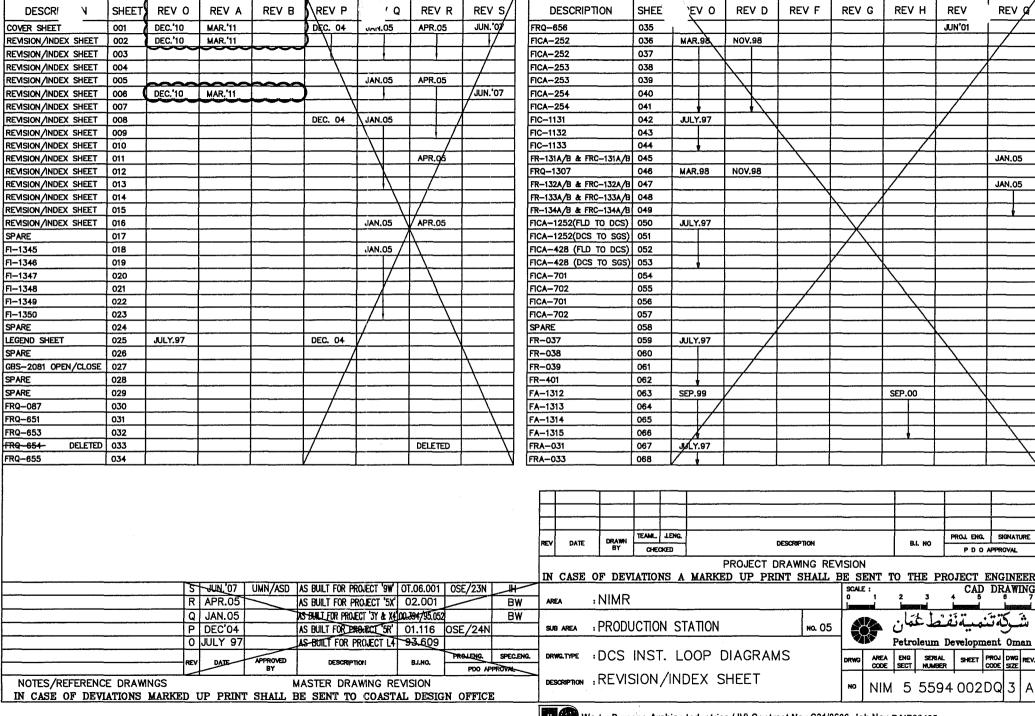
MAR. 11 APRROVED FOR CONSTRUCTION OSE/23N IN.09.011 DEC.'10 Mrp PT KDA ISSUED FOR COMMENTS IN.09.011 OSE/23N IH TEAML LENG SIGNATURE DRAWN DATE DESCRIPTION CHECKED P D O APPROVAL PROJECT DRAWING REVISION IN CASE OF DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO THE PROJECT ENGINEER CAD DRAWING :NIMR AREA : PRODUCTION STATION NO. 05 Petroleum Development Oman DRIVE : DCS INST. LOOP DIAGRAMS SERIAL

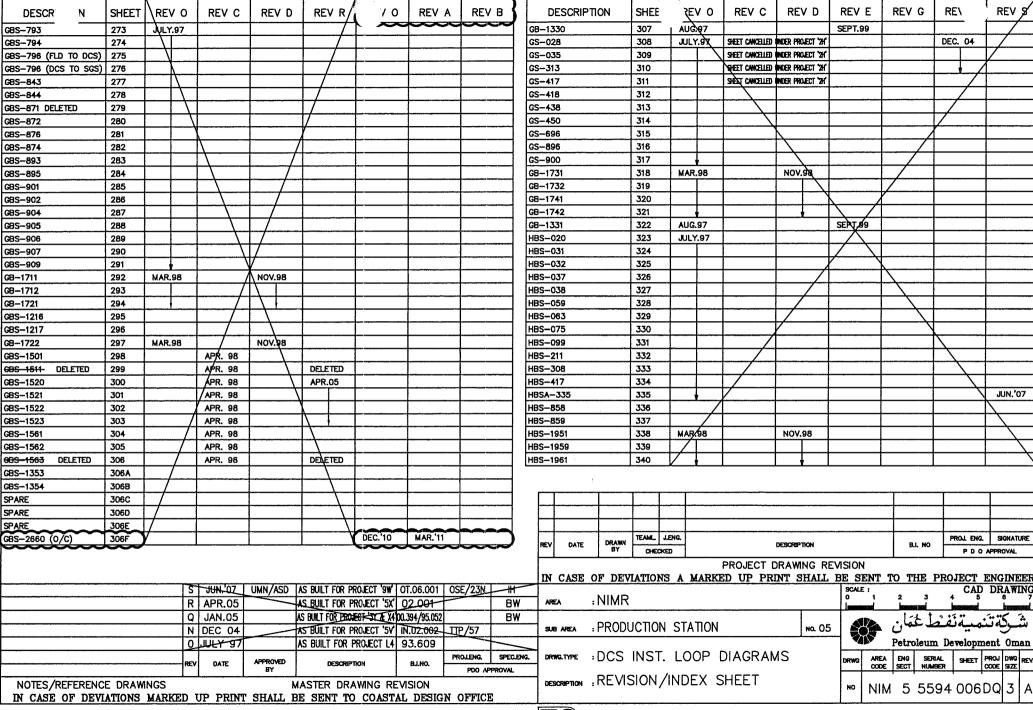
S JUN. 07 UMN/ASD | AS BUILT FOR PROJECT '9W' | OT.06.001 | OSE/23N R APR.05 AS BUILT FOR PROJECT '5X' 02,001 BW AS BUILT FOR PROJECT '3Y & X4 00.384/95.052 Q JAN.05 BW P DEC'04 AS BUILT FOR PROJECT '5R' 01.116 OSE/24N 0 JULY 97 AS BUILT FOR PROJECT LAT 93.609 WBS No PROLENG. SPEC.ENG. PPROVED DESCRIPTION PDO APPROVAL

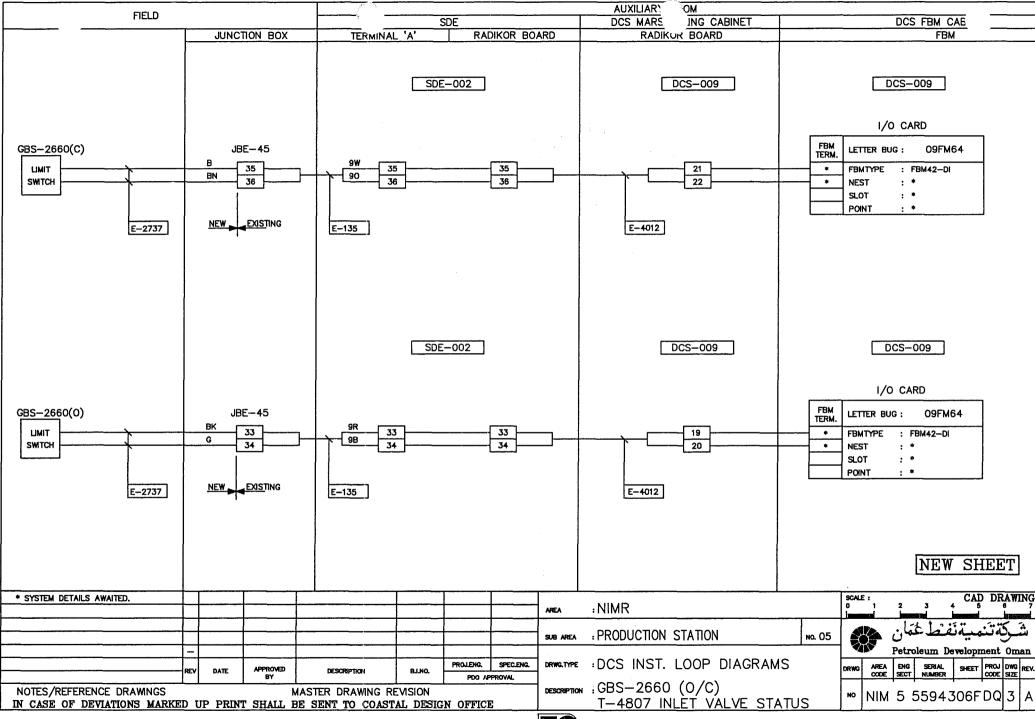
NOTES/REFERENCE DRAWINGS

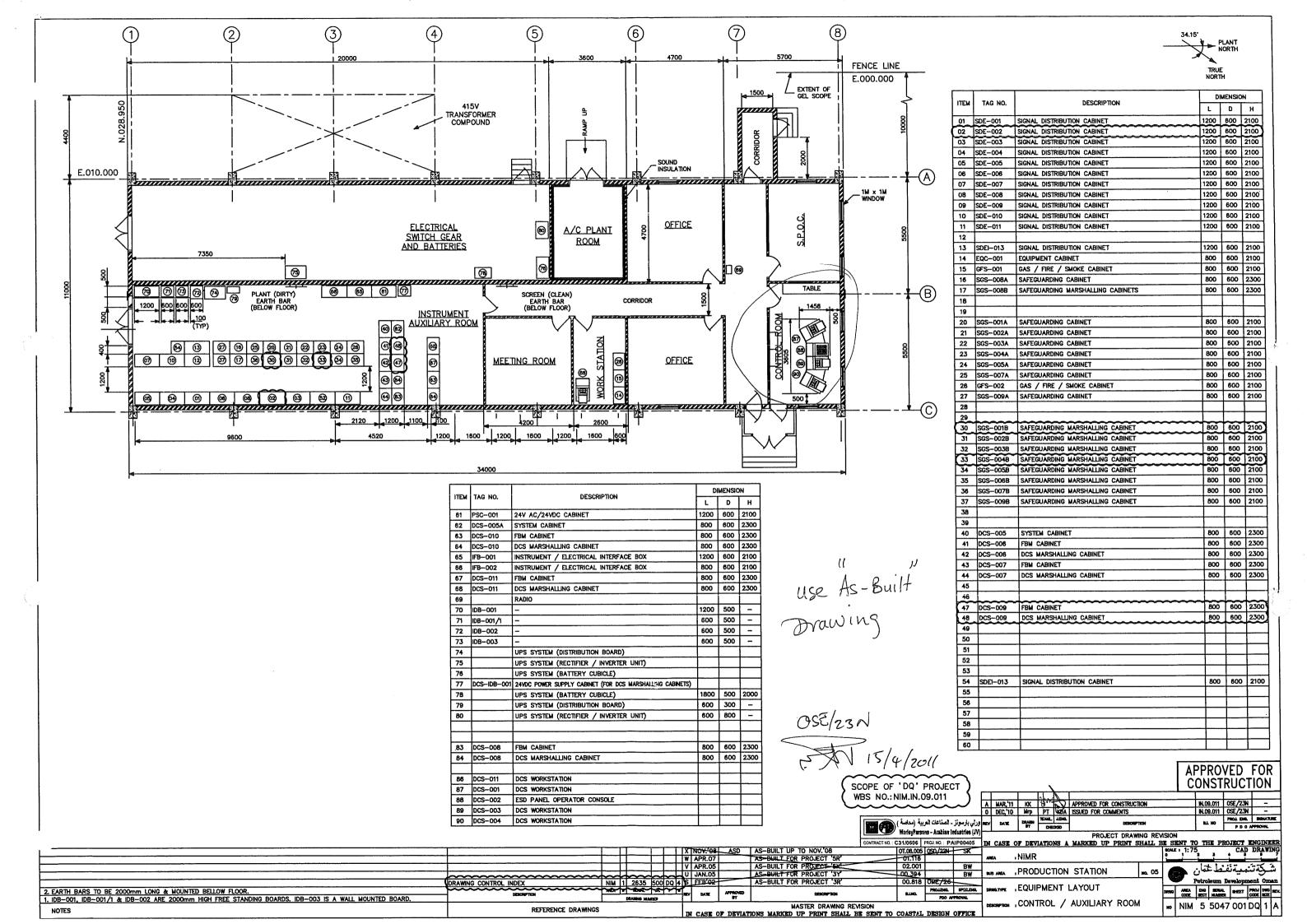
MASTER DRAWING REVISION IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

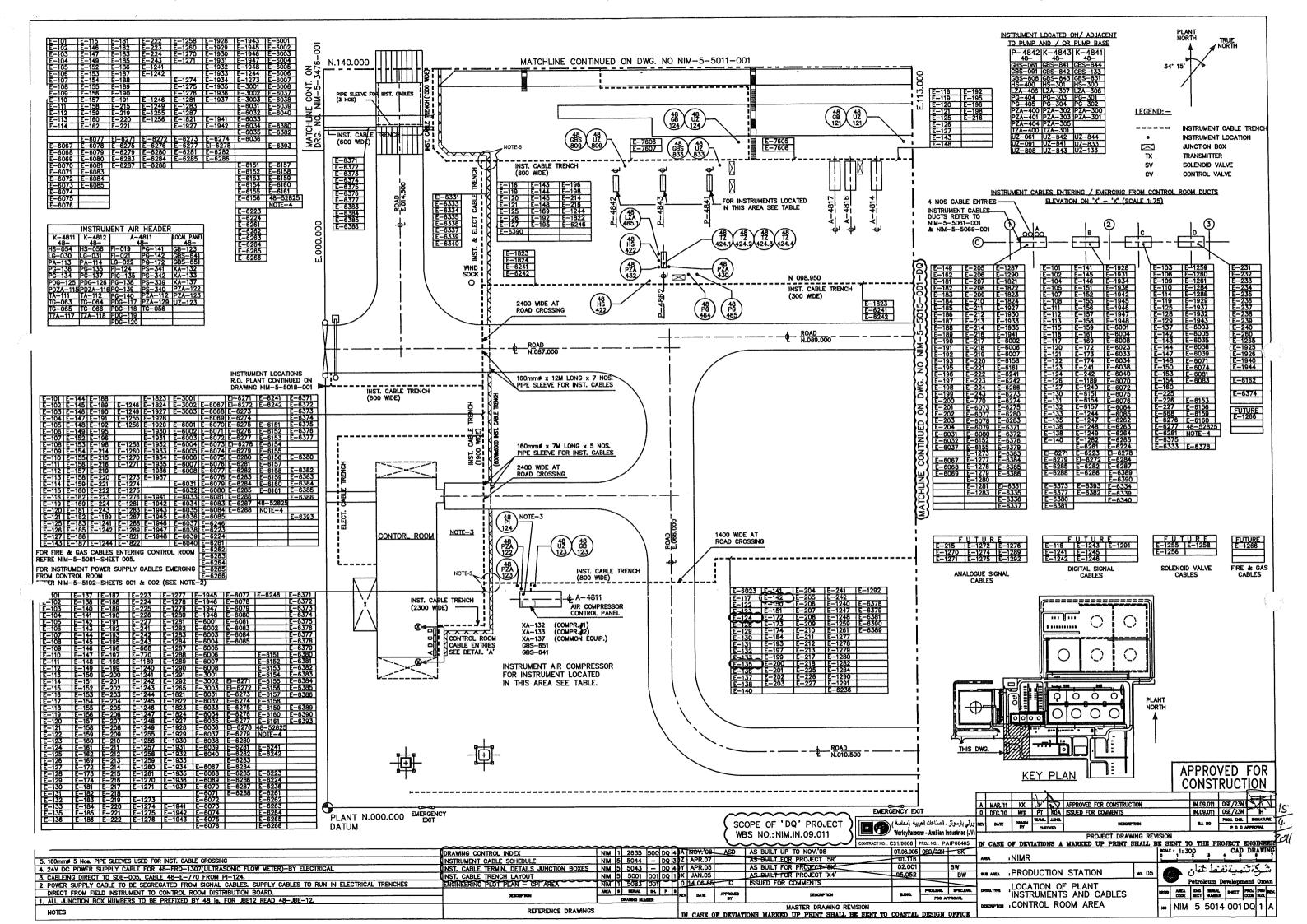
DESCRIPTION : COVER SHEET

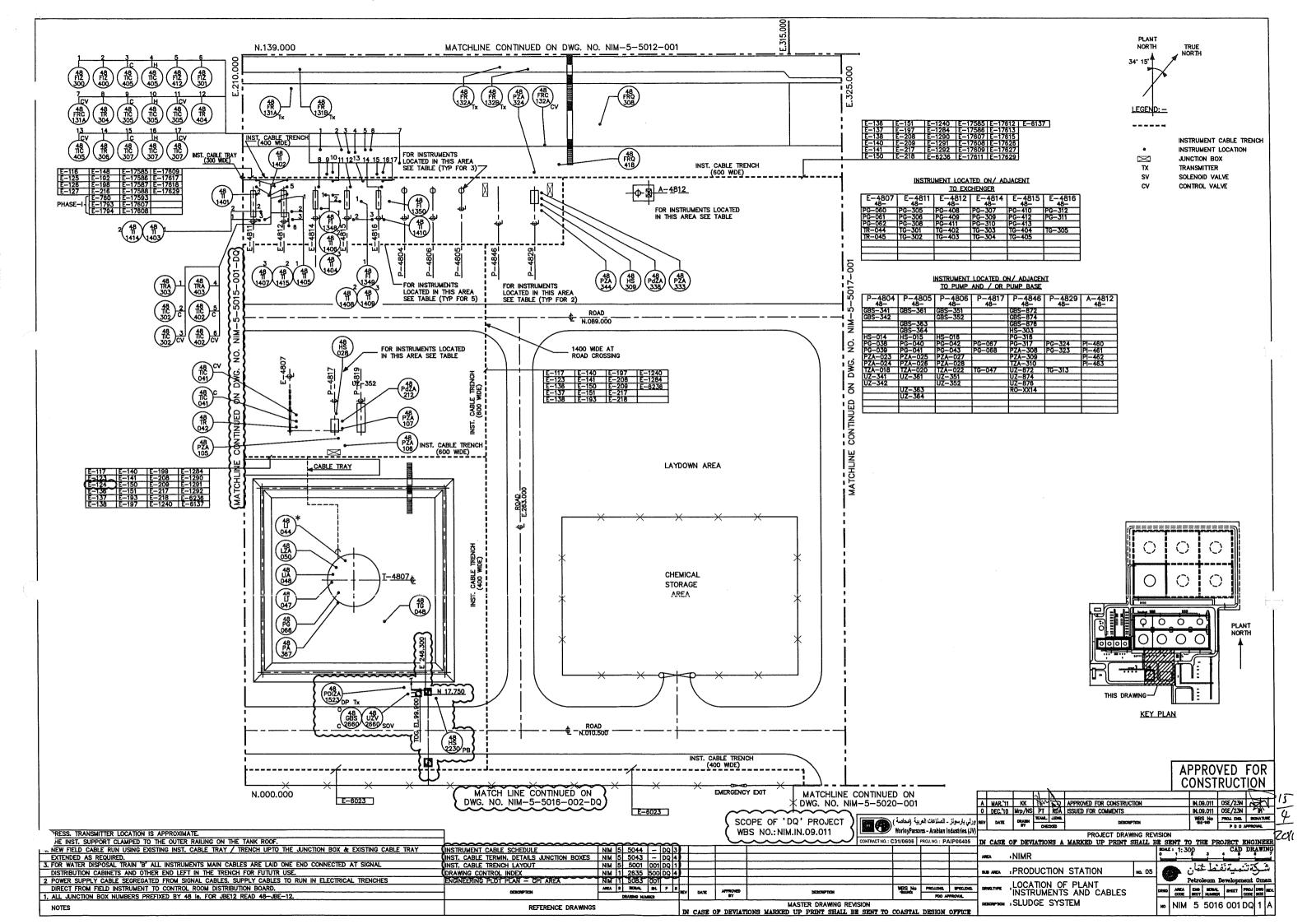


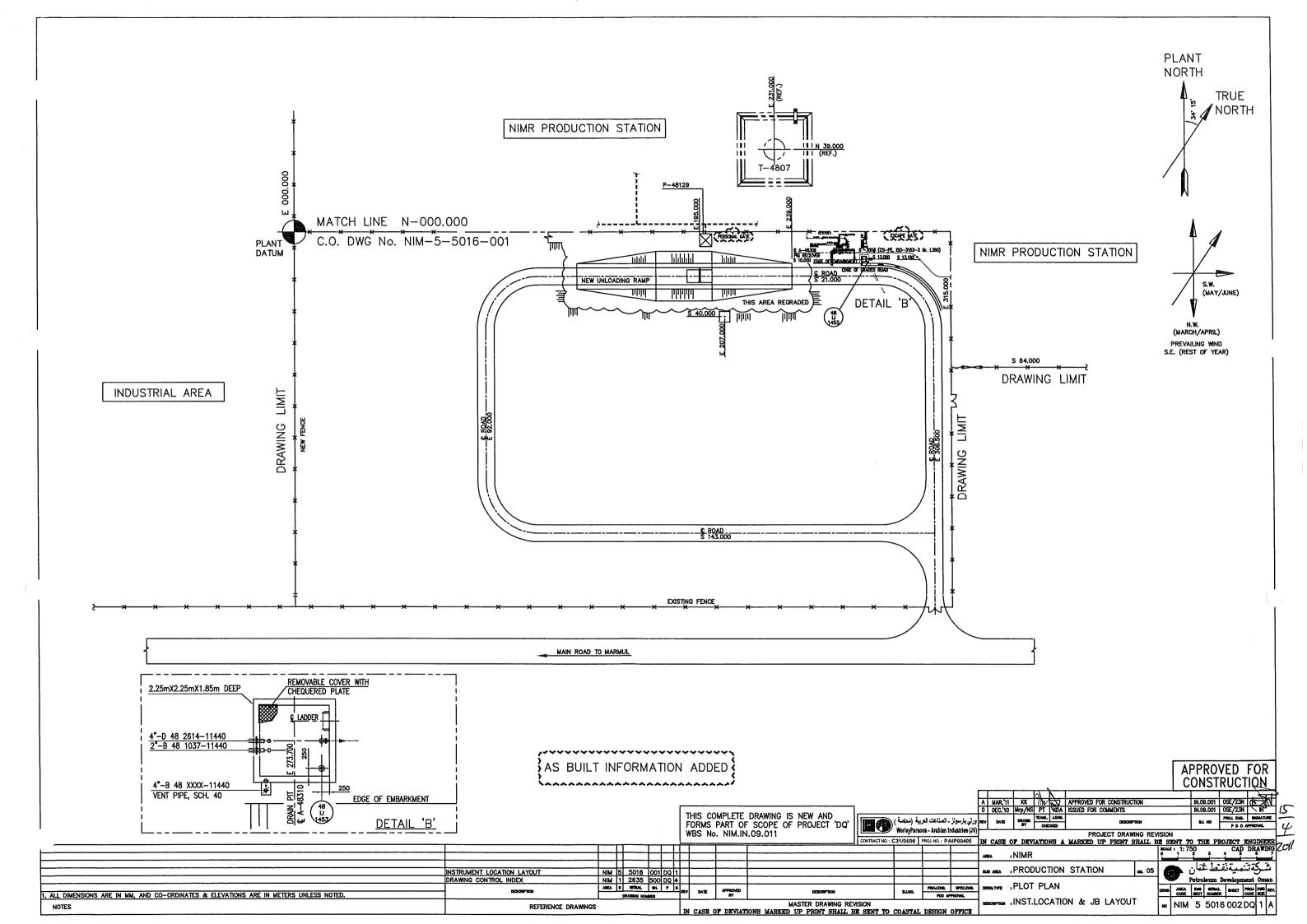


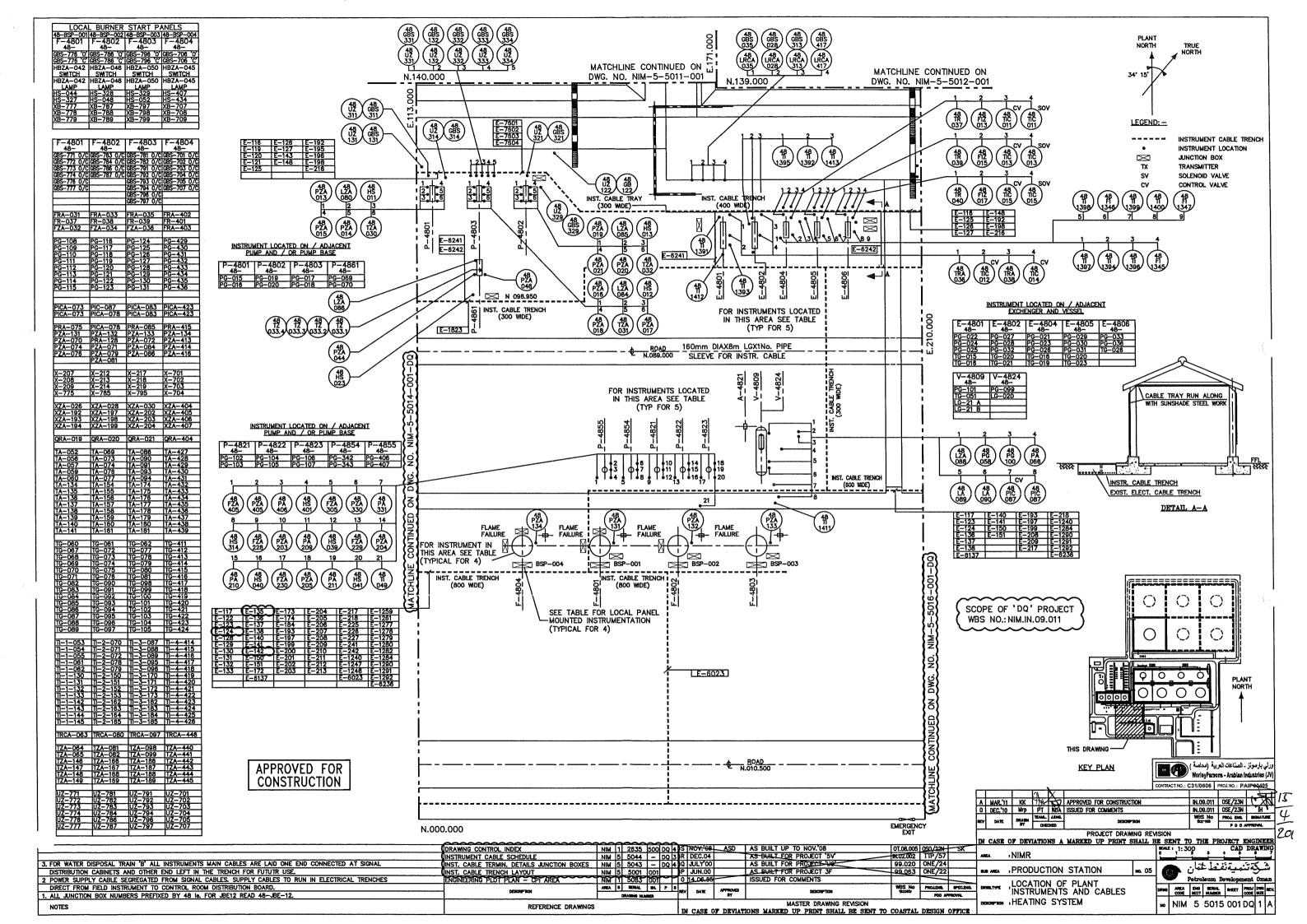


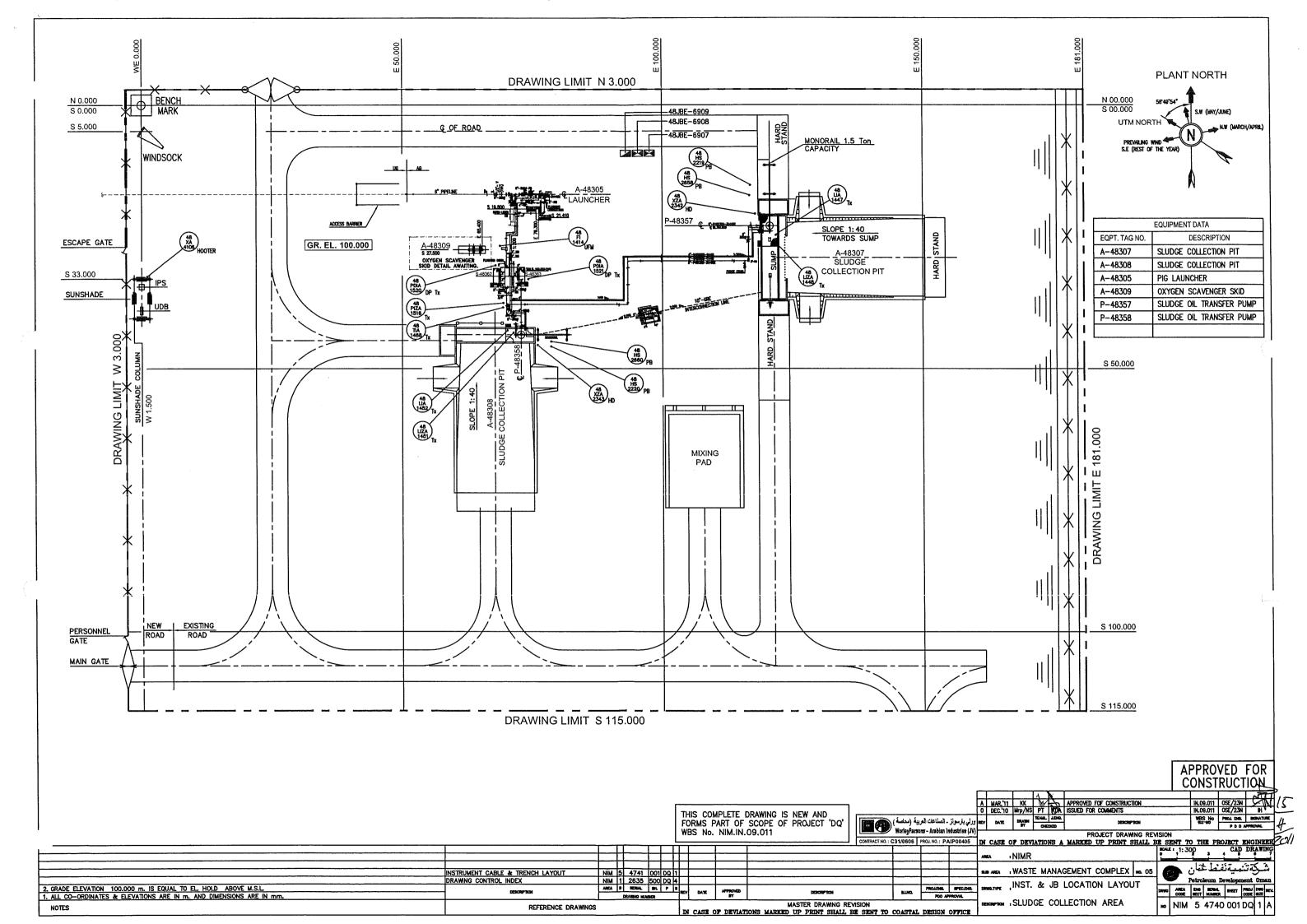


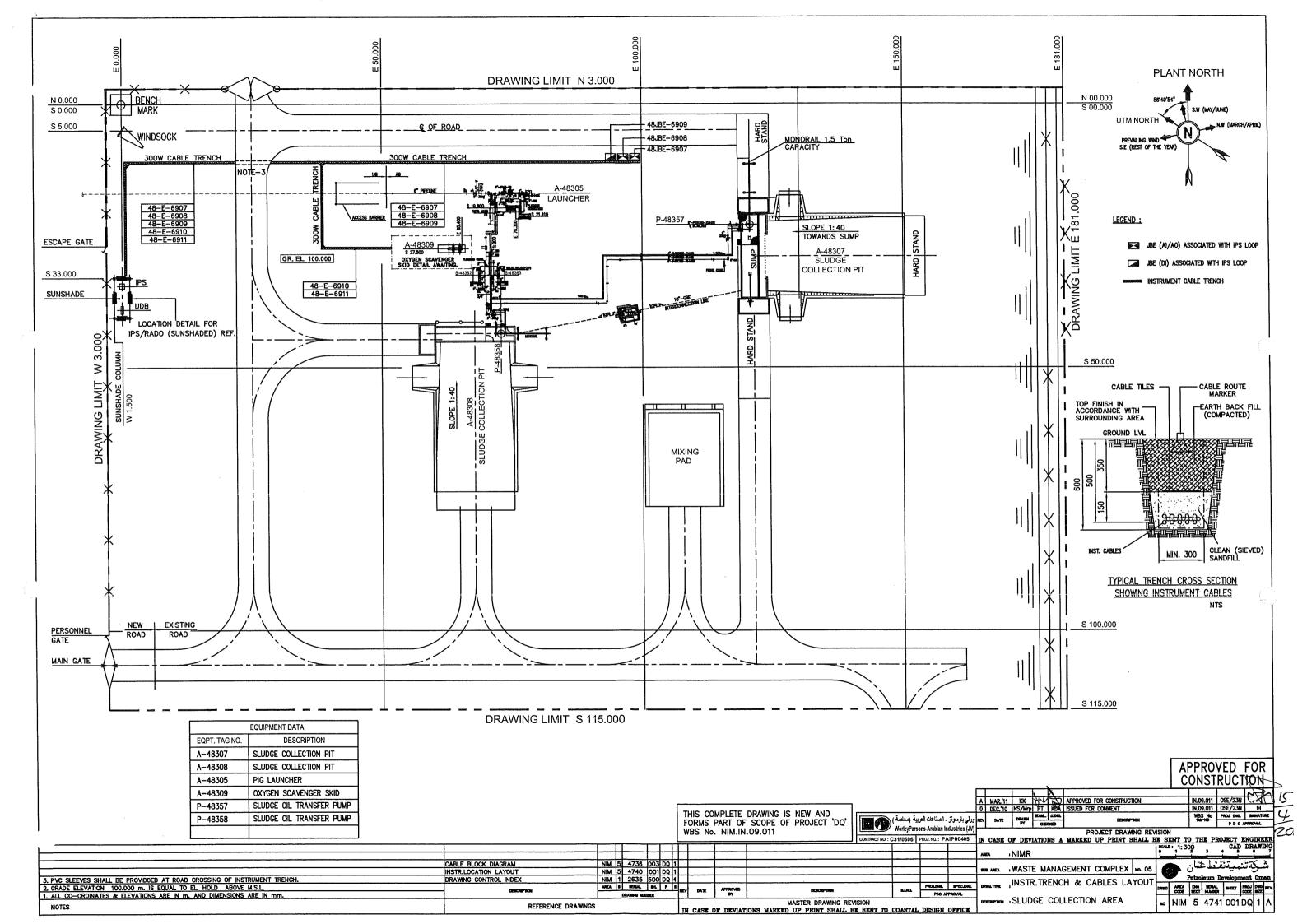


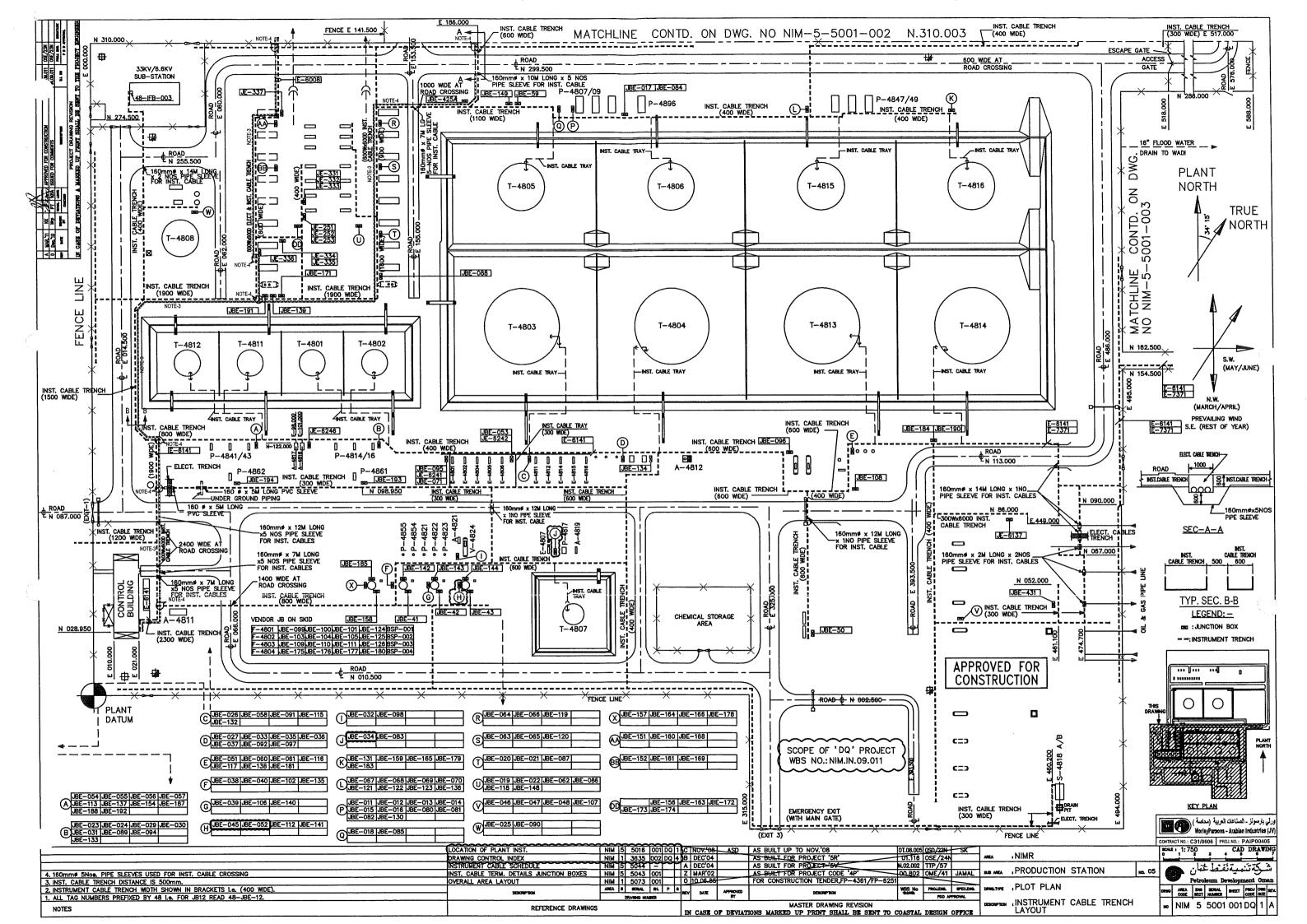












# INSTRUMENT CABLE TERMINATION DETAILS SIGNAL DISTRIBUTION CABINET COVER SHEET

SCOPE OF 'DQ' PROJECT WBS NO.: NIM.IN.09.011

# APPROVED FOR CONSTRUCTION

| 1   |         |       |        |         |                       |           |            |           |
|-----|---------|-------|--------|---------|-----------------------|-----------|------------|-----------|
|     | DATE    | BY    | CHEC   | CKED    | DESCRIPTION           | WDS NO.   | PDOA       | PPROVAL   |
| REV | DATE    | DRAWN | TEAML. | J.ENG.  | DESCRIPTION           | WBS No.   | PROJ. ENG. | SIGNATURE |
| 0   | DEC.'10 | Mrp   | PT     | Κ̈́DA   | ISSUED FOR COMMENTS   | IN.09.011 | OSE/23N    |           |
| Α   | MAR.'11 | KK    | MW     | THE CAT | APPROVED FOR COMMENTS | IN.09.011 | OSE/23N    |           |
|     |         |       | l.     |         |                       |           |            |           |

### PROJECT DRAWING REVISION

| IN CASE OF DEVIATIONS A                                            | <u>M</u>   |         | JP PRINT       |                                |               |           | NGINEER   |
|--------------------------------------------------------------------|------------|---------|----------------|--------------------------------|---------------|-----------|-----------|
|                                                                    | S          | NOV.'08 | ASD            | AS-BUILT UP TO NOV.'08         | OT.08.005     | 0S0/22N   | _SK       |
|                                                                    | R          | APR.05  |                | AS BUILT FOR PROJ. '5X'        | 02.001        |           | BW        |
|                                                                    | Q          | JAN.05  |                | AS BUILT FOR PROJECT '3Y & X4' | 00.394/95.052 |           | BW        |
|                                                                    | <u>/</u> P | DEC'04  |                | AS BUILT FOR PROJ. 5R          | 01.116        | OSE/24N   |           |
|                                                                    | N          | DEC'04  |                | AS BUILT FOR PROJ. 5V          | IN.02.002     | TTP/57    |           |
|                                                                    | 0          | JUNE'97 |                | AS BUILT FOR PROJECT 'L4'      | 93.609        |           |           |
| REFERENCE TO EQUIPMENT/TAG NUMBERS ARE TO BE PREFIXED BY AREA CODE | REV        | DATE    | APPROVED<br>BY | DESCRIPTION                    | B.I.NO.       | PROJ.ENG. | SPEC.ENG. |

NOTES/REFERENCE DRAWINGS

MASTER DRAWING REVISION

IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE

.NIMR AREA PRODUCTION STATION NO. 05 SUB AREA

ENG ARFA

Petroleum Development Oman SHEET PROJ DWG REV. CODE SIZE

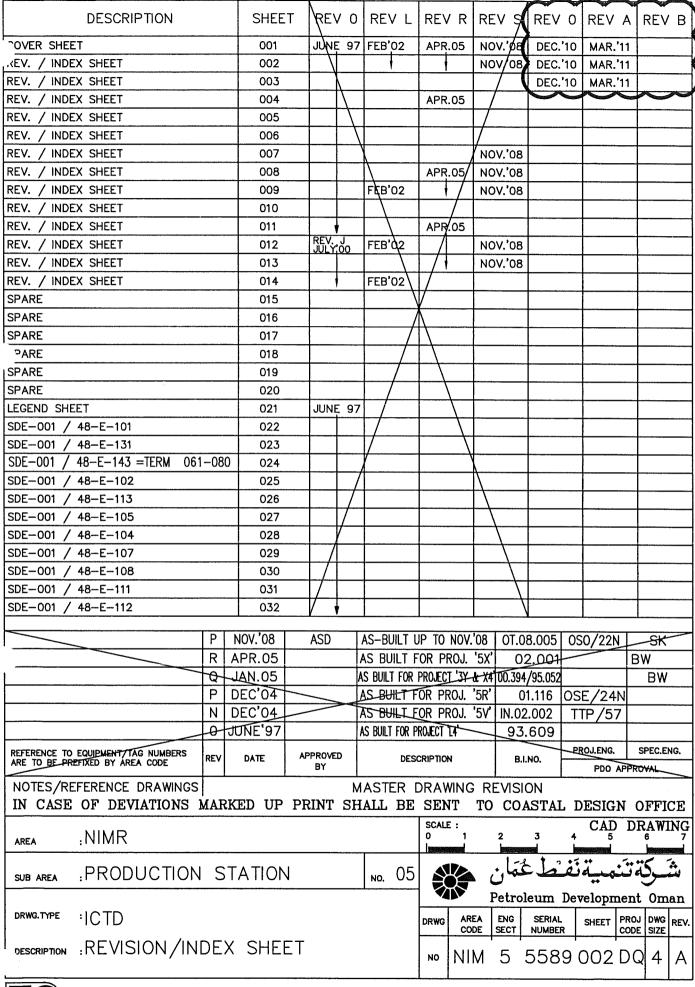
**.COVER SHEET** DESCRIPTION

:ICTD

SERIAL NUMBER 5 5589 001 DQ 4 NIM



DRWG.TYPE



| DESCRIPTION         | SHEET | REV 0    | REV J   | REV K | REV 🖔  | REV 0                  | REV A   |
|---------------------|-------|----------|---------|-------|--------|------------------------|---------|
| SDE-001 / 48-E-120  | 033   | JUNE 97  |         |       |        | )                      |         |
| SDE-001 / 48-E-121  | 034   |          |         |       | /      |                        |         |
| SDE-001 / 48-E-122  | 035   |          | JULY'00 |       | /      |                        |         |
| SDE-001 / 48-E-126  | 036   |          |         |       | /      |                        |         |
| SDE-001 / 48-E-127  | 037   |          |         |       | /      |                        |         |
| SDE-001 / 48-E-130  | 038   |          |         |       | /      |                        |         |
| SDE-001 / 48-E-132  | 039   |          |         | /     |        |                        |         |
| SDE-001 / 48-E-6246 | 040   |          | JULY 00 | /     |        |                        |         |
| SDE-001 / 48-E-133  | 041   |          |         | /     |        |                        |         |
| SDE-001 /           | 042   |          | _       |       |        |                        |         |
| SDE-001 / 48-E-1823 | 043   | •        |         | /     |        |                        |         |
| SDE-001 / 48-E-138  | 044   | 0CT'02   | /       | /     | DEC.04 |                        |         |
| SDE-001 / 48-E-141  | 045   | JUNE 97  |         |       |        |                        |         |
| SDE-001 / 48-E-140  | 046   |          |         |       |        |                        |         |
| SDE-001 / 48-E-115  | 047   |          |         | /     |        | 7                      | (       |
| SDE-002 / 48-E-135  | 048   |          |         | _     | )      | DEC.'10                | MAR.'11 |
| SDE-002 / 48-E-123  | 049   |          |         |       |        | )                      | )       |
| SDE-002 / 48-E-109  | 050   |          |         |       |        |                        |         |
| SDE-002 / 48-E-142  | 051   |          | /       |       | )      | DEC.'10                | MAR.'11 |
| SDE-002 / 48-E-116  | 052   |          | JUL/ 00 |       |        | $\left. \right\rangle$ | )       |
| SDE-002 / 48-E-117  | 053   | •        | 1/      | /     |        |                        |         |
| SDE-002 / 48-E-6236 | 054   | 0CT02    |         |       | DEC.04 |                        |         |
| SDE-002 / 48-E-144  | 055   | JUNE'97  |         |       |        |                        |         |
| SDE-002 / 48-E-124  | 056   |          |         |       |        | DEC.'10                | MAR.'11 |
| SDE-002 / 48-E-153  | 057   |          |         |       |        | )                      | )       |
| SDE-002 / 48-E-136  | 058   | остоя    |         |       | DEC.04 |                        |         |
| SDE-002 / 48-E-103  | 059   |          |         |       |        |                        |         |
| SDE-002 / 48-E-106  | 090   |          |         |       |        |                        |         |
| SDE-002 / 48-E-110  | 061   |          |         |       | _      |                        |         |
| SDE-002 / 48-E-114  | 062   |          |         |       |        |                        |         |
| SDE-002 / 48-E-119  | 063   |          |         |       |        |                        |         |
| SDE-002 / 48-E-125  | 064   | <b>/</b> |         |       |        |                        |         |
|                     |       |          |         |       |        |                        |         |

| AS BLIII T FOR PROJECT '5V' IN 02 002 TTP /57 | AARKUP 00.826       | AS BUILT FOR PROJECT 14 93.609 | WBS No P D O APPROVAL | MASTER DRAWING REVISION | DEVIATIONS A MARKED UP PRINT SHALL BE SENT TO COSTAL DESIGN OFFICE | SCALE: CAD DRAWING |                   | الالا الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر الادر | Petroleum Development Oman | DRWG AREA ENG SERIAL SHEET PROJ DWG REV. | HEET HEET                            |
|-----------------------------------------------|---------------------|--------------------------------|-----------------------|-------------------------|--------------------------------------------------------------------|--------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------|--------------------------------------|
| N DEC'04                                      | JULY'00 DVd AS BUIL | 0 JUNE 97 AJAY AS BU           | KEV DATE BY CHECKED   |                         | IN CASE OF DEVIATIONS A MARKE                                      | QMIN               | AREA :   VIIVII \ | SUB AREA , PRODUCTION STATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            | DRWG.TYPE : CTD                          | DESCRIPTION : REVISION / INDEX SHEET |



| FIEL          | D DEVICES                  | N   | 1ARSH | HALLIN | G   |        | SYSTEM  | CABLE   | & BC | ARD |          |
|---------------|----------------------------|-----|-------|--------|-----|--------|---------|---------|------|-----|----------|
| TAG<br>NUMBER | MULTICORE NO.<br>TYPE/SIZE | СО  | RE    | STI    |     | NUMBER | TYPE    | SIZE    | ТМ   | L'S | ТО       |
| 48            | CONNECTED TO               |     |       | ТМ     | L'S |        |         |         |      |     |          |
| GBS-791 O     |                            | 1R  | 1B    | 001    | 002 | E-4012 | RADIKOR | EM56/54 | 01   | 02  | DCS-009  |
| GBS-791 C     | 48-E-135                   | 1W  | 10    | 003    | 004 | E-4012 | RADIKOR | EM56/54 | 03   | 04  | DCS-009  |
| GBS-7920      | PVCI-MS-SWA-PVCS           | 2R  | 2B    | 005    | 006 | E-4012 | RADIKOR | EM56/54 | 05   | 06  | DCS-009  |
| GBS-792C      | 10x4x0.8MM<br>48-JBE-45    | 2W  | 20    | 007    | 008 | E-4012 | RADIKOR | EM56/54 | 07   | 08  | DCS-009  |
| PZA-084       | 40-JDL-43                  | 3R  | 3B    | 009    | 010 | E-4113 | RADIKOR | EM56/54 | 23   | 24  | SGS-004B |
| PZA-086       |                            | 3W  | 30    | 011    | 012 | E-4113 | RADIKOR | EM56/54 | 25   | 26  | SGS-004B |
| SPARE         | ·                          | 4R  | 4B    | 013    | 014 |        |         |         |      |     |          |
| SPARE         |                            | 4W  | 40    | 015    | 016 |        |         |         |      |     |          |
| SPARE         |                            | 5R  | 5B    | 017    | 018 |        |         |         |      |     |          |
| SPARE         |                            | 5W  | 50    | 019    | 020 |        |         |         |      |     |          |
| PZA-072       |                            | 6R  | 6B    | 021    | 022 | E-4113 | RADIKOR | EM56/54 | 21   | 22  | SGS-004B |
| GBS-7940      |                            | 6W  | 60    | 023    | 024 | E-4012 | RADIKOR | EM56/54 | 13   | 14  | DCS-009  |
| GBS-794C      | :                          | 7R  | 7B    | 025    | 026 | E-4012 | RADIKOR | EM56/54 | 15   | 16  | DCS-009  |
| GBS-7930      |                            | 7W  | 70    | 027    | 028 | E-4012 | RADIKOR | EM56/54 | 09   | 10  | DCS-009  |
| GBS-793C      |                            | 8R  | 8B    | 029    | 030 | E-4012 | RADIKOR | EM56/54 | 11   | 12  | DCS-009  |
| SPARE_        |                            | 8W  | 80_   | 031    | 032 |        |         |         |      |     |          |
| GBS-2660(0    | )                          | 9R  | 9B    | 033    | 034 | E-4012 | RADIKOR | EM56/54 | 19   | 20  | DCS-009  |
| GBS-2660(C    |                            | 9W  | 90    | 035    | 036 | E-4012 | RADIKOR | EM56/54 | 21   | 22  | DCS-009  |
| SPARE         |                            | 10R | 10B   | 037    | 038 |        |         |         |      |     |          |
| SPARE         |                            | 10W | 100   | 039    | 040 |        |         |         |      |     |          |

|             |                     |        |            |          |             |                  |          | М1           | TYPE | <b>Ξ40</b> |
|-------------|---------------------|--------|------------|----------|-------------|------------------|----------|--------------|------|------------|
| AREA        | .NIMR               |        | SCALI<br>0 | E :<br>1 | 2           | 3 4              | CAD<br>5 | DR           | AWI  | NG<br>7    |
| SUB AREA    | :PRODUCTION STATION | NO. 05 |            |          |             | فنطغ             | **       | تاظ          |      | *          |
| DRWG.TYPE   | :ICTD               |        | DRWG       |          | ENG<br>SECT | SERIAL<br>NUMBER | T        | PROJ<br>CODE | DWG  | REV.       |
| DESCRIPTION | :SDE-002 / 48-E-135 |        | NO         | NIM      | 5           | 5589             | 048      | DQ           | 4    | Α          |

| FIEL          | LD DEVICES              | N  | <b>IARSH</b> | HALLIN | G   |        | SYSTEM  | CABLE   | & B0 | ARD |          |
|---------------|-------------------------|----|--------------|--------|-----|--------|---------|---------|------|-----|----------|
| TAG<br>NUMBER | MULTICORE NO. TYPE/SIZE | СО | RE           | STI    |     | NUMBER | TYPE    | SIZE    | ТМ   | L'S | то       |
| 48            | CONNECTED TO            |    |              | TM     | L'S |        |         |         |      |     |          |
| UZ-794        |                         | 01 | 02           | 081    | 082 | E-4122 | RADIKOR | EM30/28 | 07   | 08  | SGS-001B |
| UZ-793        | 48-E-142                | 03 | 04           | 083    | 084 | E-4122 | RADIKOR | EM30/28 | 05   | 06  | SGS-001B |
|               | PVCI-SWA-PVCS           | 05 | 06           | 085    | 086 | E-4122 | RADIKOR | EM30/28 | 03   | 04  | SGS-001B |
| UZ-791        | 21x2.5MM2<br>48-JBE-52  | 07 | 08           | 087    | 088 | E-4122 | RADIKOR | EM30/28 | 01   | 02  | SGS-001B |
| UZ-797        | 40-JBE-32               | 09 | 10           | 089    | 090 | E-4122 | RADIKOR | EM30/28 | 09   | 10  | SGS-001B |
| PICA-083      |                         | 11 | 12           | 091    | 092 | E-4122 | RADIKOR | EM30/28 | 11   | 12  | SGS-001B |
| SPARE         |                         | 13 | 14           | 093    | 094 |        |         |         |      |     |          |
| UZV-2660      |                         | 15 | 16           | 095    | 096 | E-4122 | RADIKOR | EM30/28 | 25   | 26  | SGS-001B |
| SPARE         |                         | 17 | 18           | 097    | 098 |        |         |         |      |     |          |
| SPARE         |                         | 19 | 20           | 099    | 100 |        |         |         |      |     |          |

M1TYPE22 .NIMR AREA .PRODUCTION STATION NO. 05 SUB AREA Petroleum Development Oman :ICTD ENG SECT DRWG.TYPE SERIAL NUMBER PROJ DWG CODE SIZE SHEET REV. :SDE-002 / 48-E-142 NIM 5 5589 051 DQ 4

| FIEL       | _D DEVICES                     |     | MARS | HALLI | ٧G  |        | SYSTEM  | CABLE   | & BC | ARD |          |
|------------|--------------------------------|-----|------|-------|-----|--------|---------|---------|------|-----|----------|
| TAG        | MULTICORE NO.                  |     |      | STI   | RIP |        |         |         |      |     |          |
| NUMBER     | TYPE/SIZE                      | CO  | RE   | A     | 4   | NUMBER | TYPE    | SIZE    | TMI  | L'S | TO       |
| 48         | CONNECTED TO                   |     |      | TM    | L'S |        |         |         |      |     |          |
| PDZA-212   |                                | 1R  | 1B   | 181   | 182 | E-4113 | RADIKOR | EM56/54 | 29   | 30  | SGS-004B |
| HS-028     | 48-E-124                       | 1W  | 10   | 183   | 184 | E-4113 | RADIKOR | EM56/54 | 07   | 08  | SGS-004B |
| PZA-106    | PVCI-MS-SWA-PVCS               | 2R  | 2B   | 185   | 186 | E-4113 | RADIKOR | EM56/54 | 11   | 12  | SGS-004B |
| PZA-105    | 5x4x0.8MM                      | 2W  | 20   | 187   | 188 | E-4113 | RADIKOR | EM56/54 | 09   | 10  | SGS-004B |
| PZA-107    | 48-JBE-34                      | 3R  | 3B   | 189   | 190 | E-4113 | RADIKOR | EM56/54 | 13   | 14  | SGS-004B |
| SPARE      |                                | ZW. | 30   | 191   | 192 |        |         |         |      |     |          |
| PDIZA-1523 |                                | 4R  | 4B   | 193   | 194 | E-4113 | RADIKOR | EM56/54 | 39   | 40  | SGS-004B |
| HS-2230    | 48-E-135                       | 10R | 10B  | 195   | 196 | E-4113 | RADIKOR | EM56/54 | 41   | 42  | SGS-004B |
| SPARE      | PVCI-MS-SWA-PVCS<br>10x4x0.8MM | 5R  | 5B   | 197   | 198 |        |         |         |      |     |          |
| SPARE      | 48-JBE-45                      | 5W  | 50   | 199   | 200 |        |         |         |      |     |          |
|            |                                |     |      |       | *   |        |         |         |      |     |          |

M1TYPE20 .NIMR AREA :PRODUCTION STATION NO. 05 SUB AREA Petroleum Development Oman DRWG.TYPE :ICTD AREA CODE SHEET PROJ DWG SIZE ENG SERIAL REV. NUMBER :SDE-002 / 48-E-124 DESCRIPTION 5 5589 056 DQ 4 NIM

# INSTRUMENT CABLE BLOCK DIAGRAMS NIMR SLUDGE PIT SYSTEM UPGRADE

See comments.

THIS COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT 'DO' WBS No.INM.No.0011

THE COMPLETE DRAWING IS NEW AND FORMS PART OF SCOPE OF PROJECT 'DO' WBS No.INM.No.0011

THE DRAWING IS NEW WorleyParsors - Arabian Industries (IV)

WorleyParsors - Arabian Industries (IV)

PROJECT 'DO' WBS No.INM.No.0011

| — NOTES | DESCRIPTION OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE | AREA  | S SERVAL | EL P   | S REV DATE | APPROVED<br>SY | MASTER DRAWING REV                                            |             | 1190 | PDO APPROVAL                            | DESCRIPTION | : .CABLE BLOCK DIAGRAM<br>m .COVER SHEET | DICHO      | AREA BOO BERM BHEET PROJUME REV.  NIM 5 4736 001 DQ 1 A |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|--------|------------|----------------|---------------------------------------------------------------|-------------|------|-----------------------------------------|-------------|------------------------------------------|------------|---------------------------------------------------------|
|         | DRAWING CONTROL INDEX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | , NIM | 1 2635   | 500 DQ | 4          |                | 11. 10. 10. 10. 10. 10. 10. 10. 10. 10.                       |             |      |                                         | SUB AREA    |                                          | NO. 05     | شركة تنمية نفط عَمَان Petroleum Development Oman        |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |          |        |            |                |                                                               |             |      |                                         | AMEA        | NIMR                                     | SCALI<br>0 | CAD DRAWING                                             |
|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |          |        |            | I              | AND FORMS PART OF SCOPE OF<br>PROJECT 'DQ' WBS No.NM.N.09.011 | World World |      | Arabian Industries (J<br>No.: PAIP00405 | -71         | PROJECT E OF DEVIATIONS A MARKED UP F    |            | ENT TO THE PROJECT ENGINEER                             |

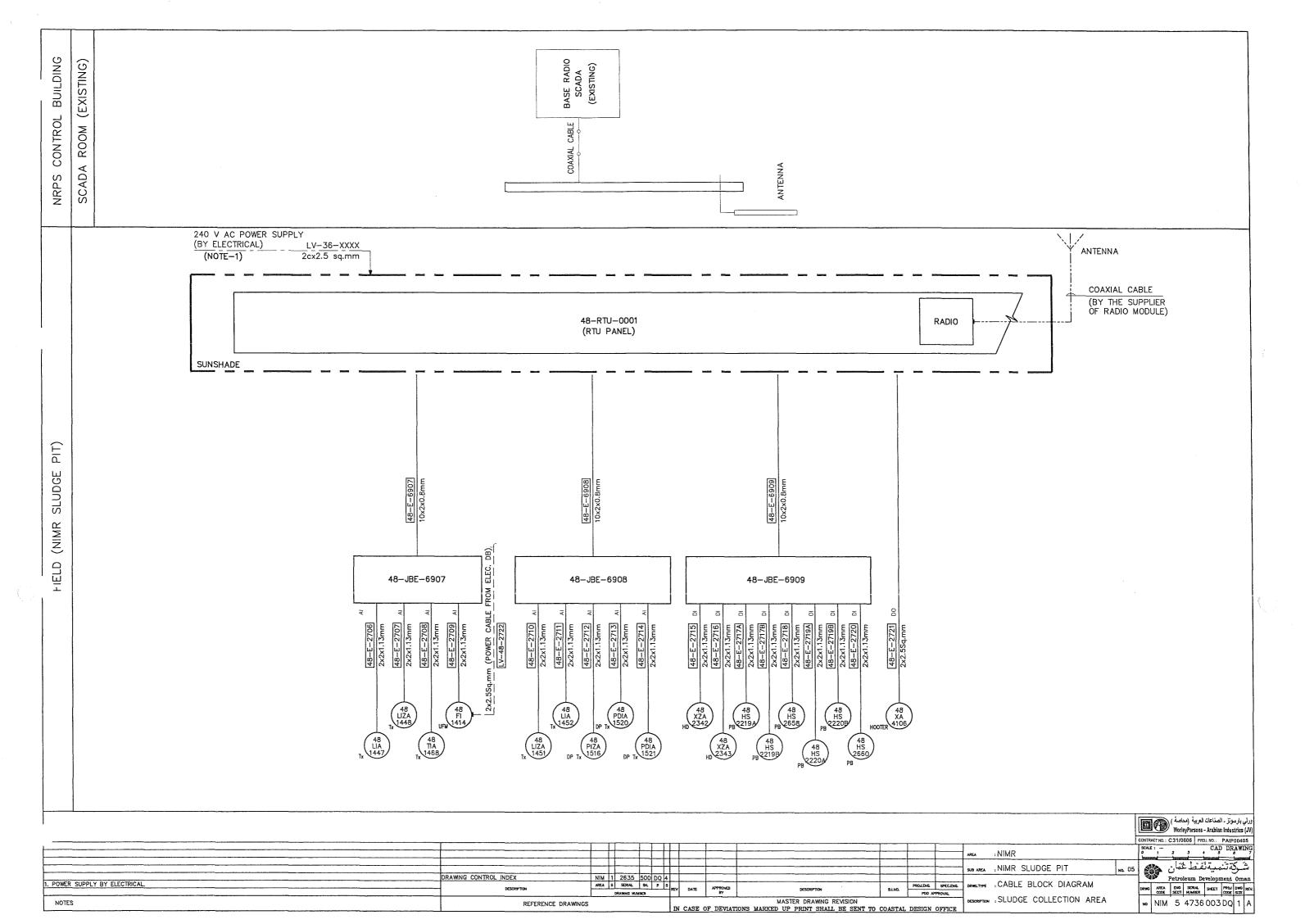
| DESCRIPTION               | REV.0                                                                                                                                     | REV.A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | REV.B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | REV.C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | REV.D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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|                           | COVER SHEET  REVISION / INDEX SHEET  SLUDGE COLLECTION AREA  SLUDGE COLLECTION AREA  PRODUCTION STATION   ND:  HARDWIRED/4-20 ma/FIELDBUS | COVER SHEET  REVISION / INDEX SHEET  SLUDGE COLLECTION AREA  DEC.'10  SLUDGE COLLECTION AREA  DEC.'10  PRODUCTION STATION  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  DEC.'10  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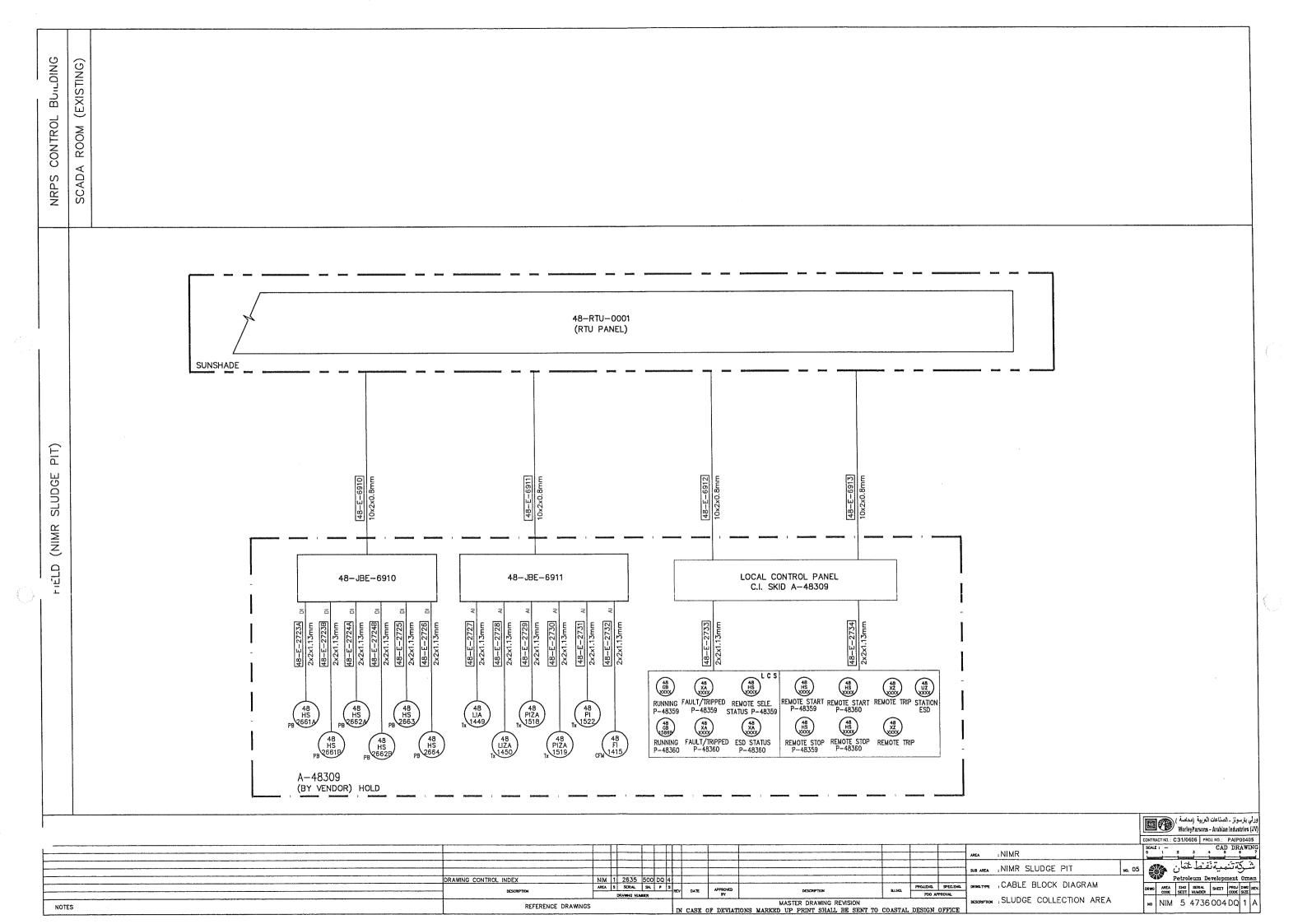
SERIAL LINK/ETHERNET/RS-485/FO NIMR 2. ALL CABLES BETWEEN ELECTRICAL PANELS AND CONTROL CABINETS SHALL BE BY ELECTRICAL.

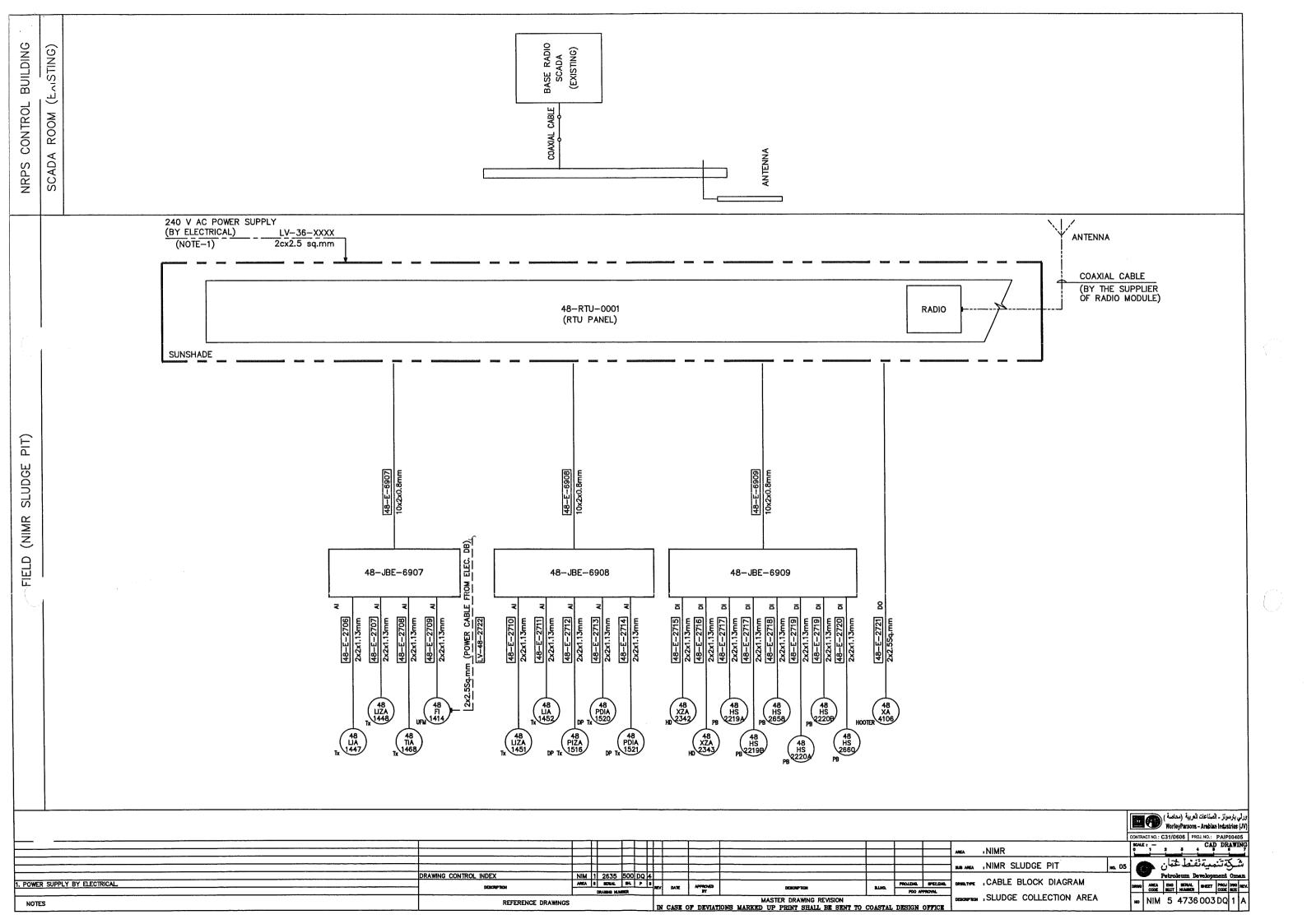
1. ALL INTERNAL WRING AND COMPONENTS WITHIN THE SYSTEM CABINETS SHALL BE SUPPLIED/ DETAILED/ FURNISHED BY SYSTEM VENDOR.

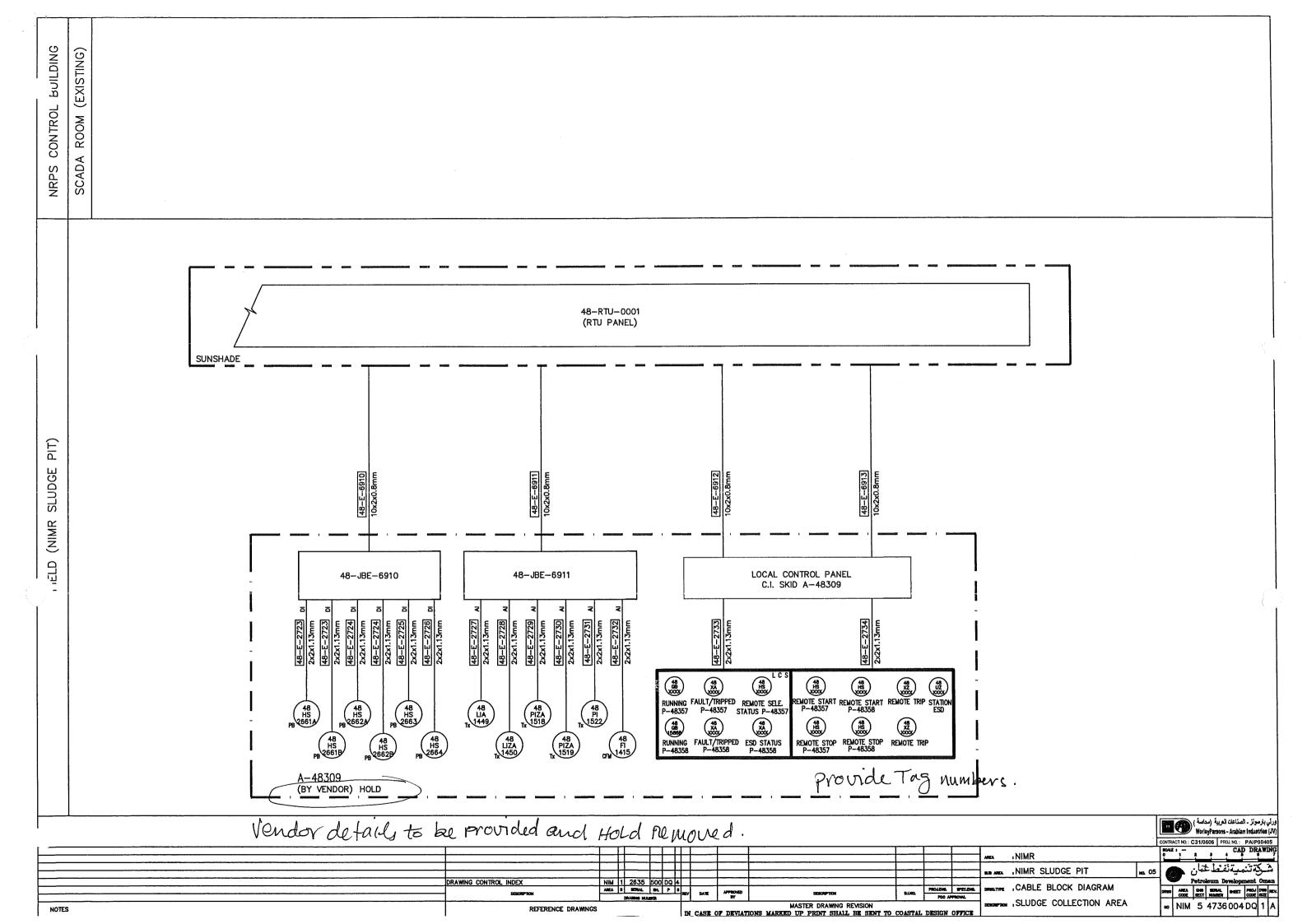
UNLESS OTHERWISE SPECIFIED, ALL FIELD CABLING/ WRING AND TERMINATIONS UP TO/ AT MARSHALING CABINETS BY INSTRUMENT

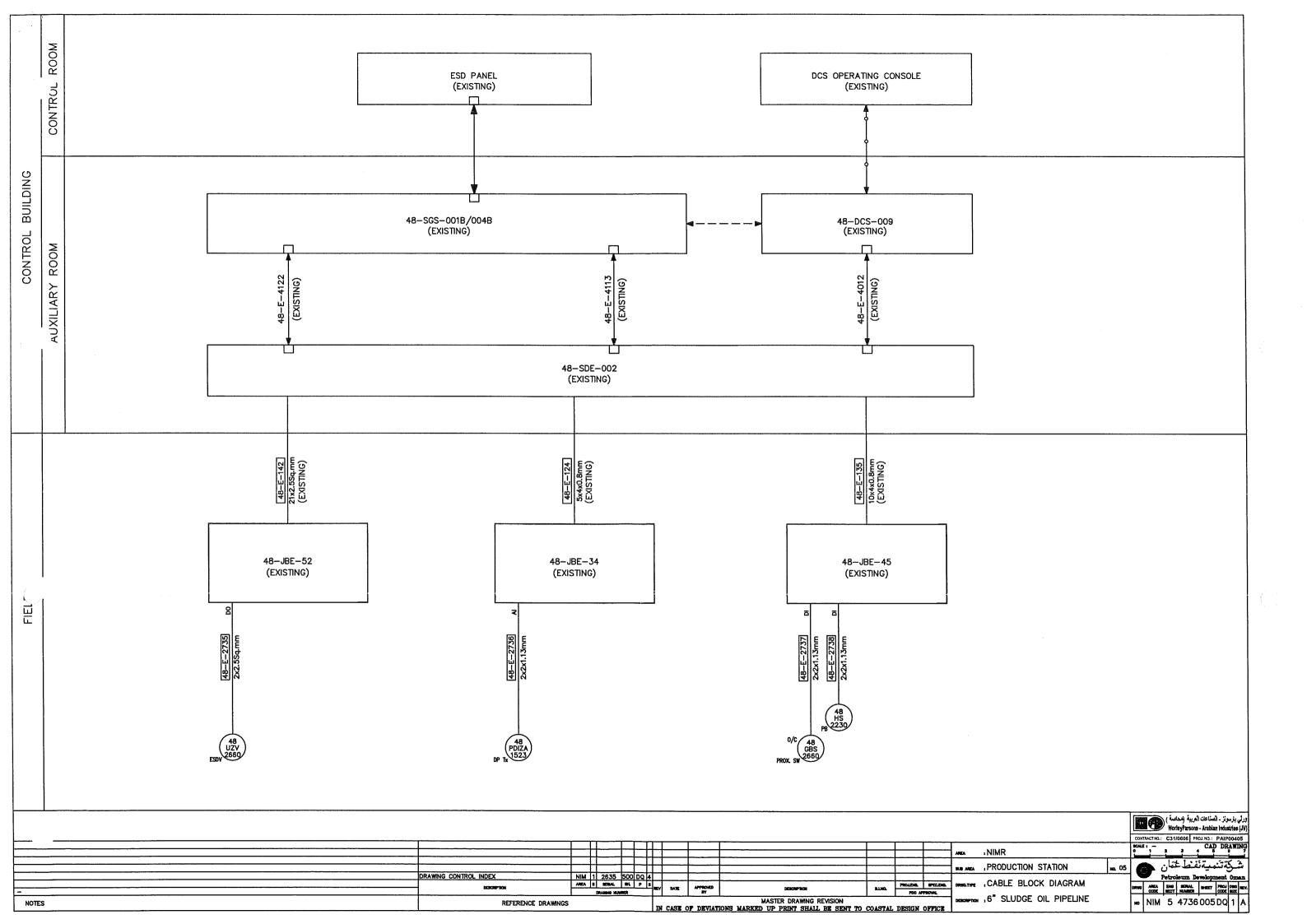
CONTRACTOR. NIMR SLUDGE PIT BLING. PROLEMA SPECIAL DRIVES TYPE , CABLE BLOCK DIAGRAM MASTER DRAWING REVISION
IN CASE OF DEVIATIONS MARKED UP PRINT SHALL BE SENT TO COASTAL DESIGN OFFICE REVISION/INDEX/LEGEND SHEET REFERENCE DRAWINGS NOTES

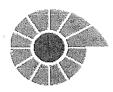












# Petroleum Development of Oman

To:

**WPAI** 

Attn: Bachcha Ram Yadav

# TRANSMITTAL LETTER No: PAIP00405/WPAI /PDO/NIMR/T0060/11

W.B.S No: Date:08/02/2011

Project Title: Nimr Sludge Pits System upgrade - FED & DD

| Identification Number | Issue | Code | Nos | Short Description       |
|-----------------------|-------|------|-----|-------------------------|
| PAIP00405/PDO/TR00098 | . •   | 2    |     | Cause & Effect Diagrams |

# Codes:

1. Comments as Noted

2. Approved

3. Revised

5.For Construction

6.For Enquiry

7.For Purchase

9.For Final

10.Cancelled

11.For Information

| Ì | 1                |                          | 1                              | 1                                          |                                                           |                                                                      | 1                                                                                   |                                                                                           |
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|   |                  |                          |                                |                                            |                                                           |                                                                      |                                                                                     |                                                                                           |
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Additional Remarks:

Yours Very Truly Sr. Khalid Al-Maqbali. OSE22N Project Engineer Petroleum Development of Oman

# Internal Instruction Note



# Nimr Sludge Pits System Ugrade-FED&DD

| Name:           |          | Maqbali, Khalid                                       | Ref. Ind.                               | OSE2                                         | 2 <i>N</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Date      | 05-05-2011                              |
|-----------------|----------|-------------------------------------------------------|-----------------------------------------|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------|
| 0.1.            |          | PAIP00405/PDO/                                        | TR00096                                 |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                         |
| Subject         | :        | Cause & Effect Di                                     | iagrams                                 |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                         |
| Issue For: A    | pprov    | al Comments Inform                                    | nation App                              | roved for A                                  | AFC Final                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | / As-buil | t                                       |
|                 | Enqu     | iry Purchase Ori                                      | ginal for Signa                         | ature Yo                                     | our Files Re                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ecord     | Action                                  |
|                 | Inter    | nal                                                   | Signature                               | Date                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rem       |                                         |
| 05/02/2011      | OSE      | 14N JOSE 15 N                                         |                                         | 6/02/11                                      | No Co.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | maer      | t s                                     |
| 05/02/2011      | OSE.     | 23N <                                                 | TEG                                     | 8/2/2011                                     | Appro                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ved-      | *************************************** |
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|                 |          | Blue Ink pen to comments.<br>Document to OSE/25N Afte | er Review/Co                            | mments                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                         |
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## **Document Transmittal**

Job No:

PAIP00405

Transmittal No:PAIP00405/PDO/TR00098

Title:

Nimr Sludge Pits System upgrade - FED & DD

Date: 05/02/2011

Client Code:

PDO

Name: Petroleum Development Oman LLC

From:

Bachcha Ram Yadav

o: KHALID AL-Maqbali OSE22N

We enclosed herewith the following documents for Original for Signature Please acknowledge by returning a copy of this transmittal dully signed

| Sr. No. | Document No.   | Rev.# | Title                   | Copies | Remarks |
|---------|----------------|-------|-------------------------|--------|---------|
| 1       | NIM-5-5005-001 | В     | Cause & Effect Diagrams | 1100   |         |
| 2       | NIM-5-5005-002 | A     | Cause & Effect Diagrams |        |         |
| 3       | NIM-5-5005-007 | A     | Cause & Effect Diagrams |        |         |

### ternal Distribution:

Project: Indraneel Dutta

Process: Manisha Devghare Mechanical: Himanshu Desai

Electrical: Shahaul Diwan

Control & Automation: Prakash Thomas

Civil: Balaraj Reddy

Pipeline: Mallesh Mallik

Client: KHALID AL-Maqbali OSE22N

Construction: N Procurement: N



Date

WorleyParsons Project Engineer Bachcha Ram Yadav

Transmitted By

√orleyParsons/CLIENT Copy

Printed by: ABDULAZIZ.AL-FOURY, Based on Release notes: INST 00020.

Others:

